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ABSTRACT

This set of eight papers is related to the Mathemagenic Activities Program (MAP) for early childhood education of the University of Georgia's Follow Through Program. The MAP is based on Piagetian theory and provides sequentially structured sets of curriculum materials and processes that are designed to continually challenge children to learn about the physical and social environments. A practical guide to the MAP, sample by-laws for a policy advisory committee, guidelines for implementing the MAP, a teacher training plan, a program description, and a MAP evaluation study are provided. Also included are a brief historical overview titled, American Society and Children: 1850-1890, and an essay titled, American Indian Education. The practical guide provides an introduction to Follow Through, a discussion of the instructional component, including staff role and curriculum content descriptions, as well as an overview of the noninstructional and program evaluation components of the MAP. The MAP evaluation study of program implementation in first and third grade classrooms in three southern communities suggests that the MAP can be implemented in communities having diverse characteristics. (Author/RH)

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MATHEMAGENIC ACTIVITIES PROGRAM: REPORTS ON PROGRAM ADMINISTRATION. (Title Supplied).
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IMPLEMENTATION OF THE MATHEMAGENIC ACTIVITIES PROGRAM -- FOLLOW THROUGH: ANALYSIS OF CLASSROOM PROCESSES[1]

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PREFACE

The MAP evaluation program has presented reports of several dimensions of the University of Georgia Follow Through program including the impact of the MAP classroom learning environment on development of logical thinking, on social development and on both short and long term academic achievement of FT children. The purpose of this report is to present preliminary findings of the social interaction (i.e., teacher-child) characteristics of the MAP classrooms. Specifically, we are interested in answering two important questions: 1) Do MAP-FT teacher strategies produce a learning environment close to the MAP ideal (i.e., what is the fidelity of implementation of MAP); and 2) How, and in what ways, does the MAP-classroom learning environment (CLE) differ from non-Follow Through and/or traditional classrooms. Future reports will be concerned with more detailed analysis of these questions as well as the relationship of critical features of the MAP-CLE to cognitive, social and academic achievements of Follow Through children.

These studies are critical for evaluating the effectiveness of the MAP Sponsor training program for teachers and for determining what aspects of the MAP teaching strategies and CLE produce what types of impacts on the Follow Through children. Such information is necessary in order to plan future teacher training activities as well as modification of the MAP model for more effective classroom learning environments.

Many people made significant contributions to this report. Dr. Hugh Gash and Ms. Pam Perreault were instrumental in identifying a set of MAP classroom observation variables. The data were collected and analyzed by MAP-FT staff members with the assistance of a large number of teachers and project staff in three communities. The authors express their appreciation to these people and to Ms. Helen Brown, Director of McCormick County Follow Through, Mrs. Linda Pruitt, Director of Pickens County Follow Through, and Mrs. Margaret Lacey, Director of Gulfport Follow Through, and to the many children whose cooperation made this study possible.

Charles D. Smock

ABSTRACT

The purpose of this study was to assess the degree of implementation of the instructional component of the Mathemagenic Activities Program - Follow Through (MAP-FT) in Pickens County, Georgia, McCormick County, South Carolina, and Gulfport, Mississippi. Implementation was defined as the degree to which selected social interaction variables appropriate to MAP-FT occurred in the classrooms of each community. Three major questions were asked: (1) Are there differences in the fidelity of implementation of the MAP-FT program among the Follow Through classrooms in the three communities? (2) Do the Follow Through and Non-Follow Through classrooms differ in classroom processes ocurring in the communities? (3) Do the MAP-FT classrooms differ from a national sample of traditional classrooms? Classroom observational data, via the Stanford Research Institute Classroom Observation Instrument (COI), were collected in Follow Through and Non-Follow Through first and third grade classrooms (Spring 1975) and analyzed using a quintile analysis approach developed by Stallings and Kaskowitz (1974). Thirty-two COI Five-Minute Observation variables considered to represent classroom processes occurring in the ideal MAP classroom were used as criteria for assessing the fidelity of implementation. Total implementation scores (IS) were obtained for each classroom in the communities and these were then averaged to yield a mean implementation score for each community by grade level and program. Data from grades one and three were analyzed separetely (analyses of variance, t-tests) to answer the three questions. Results indicated that: (1) for each grade level, no significant differences were found among the Follow Through classrooms in the three communities; (2) there were statistically significant differences between Follow Through and Non-Follow Through classrooms for both grade levels only in the McCormick Project; and (3) all Follow Through classrooms, with the exception of those in Pickens County, did approach the Sponsor ideal more than did the traditional classrooms, and all Non-Follow Through classrooms differed from the traditional classrooms. The results are discussed in terms of implementation, the transportability of the MAP-FT model to communities with diverse characteristics, and the prevalence of diffusion of the MAP-FT classroom processes to Non-Follow Through classrooms in the communities. Limitations of this study and recommendations for future investigations of implementation are presented.

INTRODUCTION

The evaluation of child outcomes attributable to an innovative educational program must include some measure of degree of implementation of the program. Follow Through represents a comprehensive educational program and implementation of the program requires an operationalization of the components of a total educational environment (i.e., administrative decision making, teacher and child processes, classroom environment and curriculum). How well, and how easily the implementation can be accomplished is important not only to the success of the program, but also to its transportability to other communities. This report assesses the degree of implementation of the classroom learning environment of the Mathemagenic Activities Program - Follow Through (MAP-FT) in a limited number of classrooms in three communities.

Do the classroom processes correspond to the sponsor's goals? Various means of determining the degree of implementation of intended programs can be considered. Success of implementation could be inferred from comparisons of child outcomes in the innovative program with those of a comparison or control group. Alternatively, inferences can be made on the basis of changes over time (i.e., longitudinal child outcomes). A preferred approach is more direct - i.e., comparison of classroom observations with either a set of criterion objectives or with those from norms; i.e. comparison classrooms. Finally, classroom process and child outcome factors need to be examined in relation to each other to explicitly determine the impact of specific instructional processes on the child's growth.

This study examines MAP classroom processes using an observational and analysis methodology designed by Stanford Research Institute (Stallings and Kaskowitz, 1974). The report is preliminary to a more comprehensive study which includes the relation of child outcomes to degree of implementation of the MAP classroom program. Three questions are addressed here:

(1) Do the MAP-FT classrooms in three communities differ in their degree of implementation?

(2) Do the MAP-FT classrooms and the local non-Follow Through (NFT) differ in implementation?

(3) Do the MAP-FT classrooms differ from traditional classrooms (National NFT) in degree of implementation?

MAP-Follow Through

The University of Georgia Follow Through program started in the Fall of 1968. A revised program, that of the MAP, emerged in the Fall of 1969, with projects located in five communities; a sixth project site was added in Fall, 1971. The MAP model considers a project within a community as a miniature comprehensive school system that provides a model for change within the community educational system (Smock, 1969, 1974, 1975). The instructional component of a MAP-FT project includes classroom practices based on the following principles derived from the Piagetian theory of development: (1) Cognitive and affective development are products of interactions between the child and his environment. It is not sufficient that the child merely copy his environment; he must be allowed to actively construct an interpretation in terms of his own level of development. (2) The child's interactive exchanges with the environment must be at both the mental and physical level of activity. (3) The child is attracted and challenged to learn by tasks representing the next step beyond his current experience and knowledge level. Thus, the emphasis in MAP is on learning by doing and individual decision-making on the part of the child. Instructional strategies are designed to create a learning environment that: (a) provides an appropriate discrepancy between the child's current level of functioning and task requirements (Mismatch); (b) requires the child to engage in coordinating actions, both physical and symbolic (Activity); and (c) provides multiple options for the child in terms of task difficulty and task type (Personal regulation). These instructional strategies are reflected in specific physical and social characteristics of the ideal MAP-FT classroom. Typical physical characteristics include small group or individualized activity settings geared to each child's cognitive and academic level, child-selected seating arrangements and workgroups, instructional activities involving concrete objects and activities, and accessible classroom learning centers. Social interaction involving open-ended questions, praise, and general attention from teachers and aides as well as child-initiated interactions with adults, children interacting with each other, and children instructing themselves are also ideal characteristics.

The Follow Through programs throughout the country have been classified into three groups (Maccoby and Zellner, 1970). Group A may be described as "self-actualization," with emphasis on socio-emotional goals. Group B may be described as "behavior modification," with emphasis on traditional academic goals. Group C may be described as "cognitive growth," with emphasis on concept development through experience and exploration. The

MAP falls in the latter group, in which performance on intellectual tasks is thought to reflect the level of development of mental structures and operations. In this school of thought, classrooms are designed to provide an environment to facilitate the normal stage-wise growth of the **intellectual and socio-emotional processes in the context of promoting acquisition of academic skills.**

Classroom Observation Instrument

Rationale: A number of instruments to assess classroom interactions and processes are available (Stanford and Roark, 1974). The Classroom Observation Instrument (COI), developed by the Stanford Research Institute (SRI) in conjunction with Follow Through sponsors, was designed specifically "to focus on and record the instructional methods, interpersonal interactions, and classroom atmosphere in ways necessary to reflect the variety of sponsor models (Stallings et. al., 1974; p. 23)." A record of actual classroom processes was needed both to assess the degree to which teachers were practicing the methods designed by the sponsor and to determine the specific reasons for differential child outcomes.

Description: The Classroom Observation Instrument (COI) is composed of five sections: (1) Classroom Summary Information (CSI); (2) Physical Environment Information (PEI); (3) Classroom Check List (CCL); (4) Five-Minute Observation Preamble (PRE); and (5) Five-Minute Observation (FMO) (see Appendix A). A short summary of each of the sections with emphasis on the FMO, is provided here; however, for a more detailed explanation the reader is referred to Stallings (1973, pp. 15-22) or Stallings et. al. (1974, pp. 23-32).

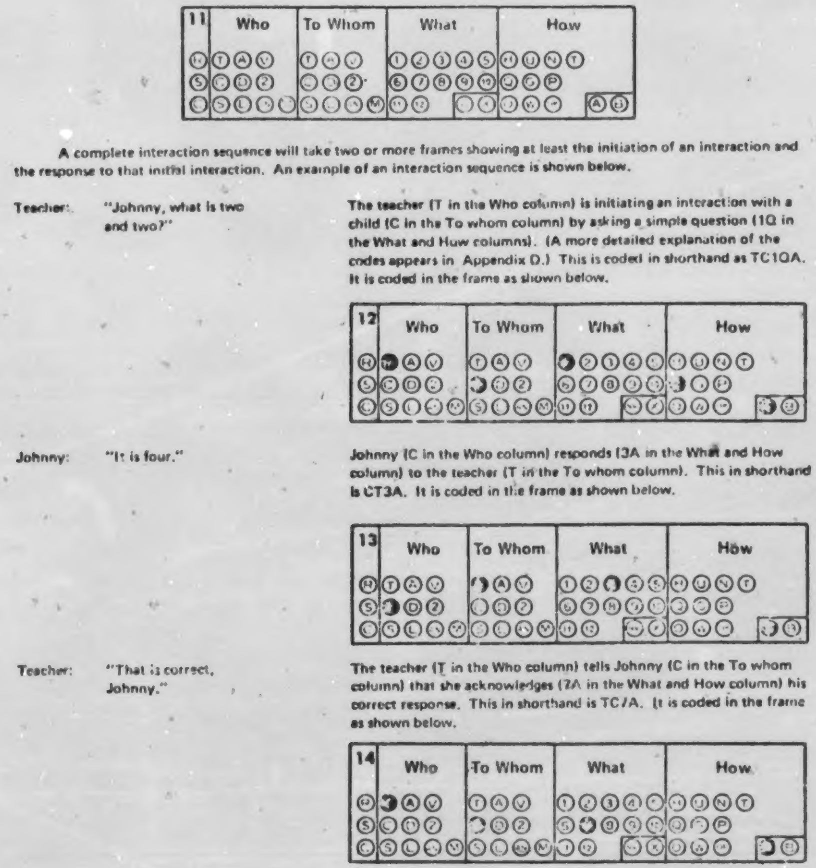
The CSI provides information on the number of children, teachers, aides, and volunteers present in the classroom on the observation day, identifies the observer and classroom, and provides information on the length of the school day.

The PEI provides information about the classroom environment such as the presence and use of instructional materials, equipment, etc., the methods of seating, and the grouping of the children in the classroom. These two sections are completed once during each observation day.

The last three sections (CCL, PRE, and FMO) are referred to as the Classroom Observation Procedure (COP) which provides information on the classroom structure and processes. The observer completes four COP's per hour and approximately 16-20 during an observation day. The CCL provides information on the activity taking place in the classroom at the time of the observation. The activities include such things as group time, academic subjects (mathematics, reading, science, etc.); the materials being used (television, audio-visual, tests, workbooks, etc.), and practical skills acquisition. In addition, the CCL records the number of children and whether an adult is involved in the activity. It is referred to as the "snapshot" of the classroom. The PRE is filled out immediately after completion of the CCL and specifies the activity, focus person, adult role, and number of children the focus person is interacting with during the five-minute observation.

The last and most important section of the COI is the FMO. This section follows immediately after the CCL and PRE and records the interactions among the people in the classroom. A preselected focus person's (either an adult or a child) interactions and behavior are recorded for five minutes.

Interactions are coded within 76 "frames" in the FMO. Each frame consists of four categories: (1) "Who does the action?" (2) "To whom is it done?" (3)"What is done?" (4) "How is it done?" Each category consists of a set of codes with which the observer describes behavior. The codes recorded in a frame are referred to as a "sentence," with the Who and To whom categories corresponding to the subject and object, respectively, while the What corresponds to the verb or predicate, and the How acts as a modifier (see Figure 1). The codes used and their operational definitions can be found in Appendix B. Sets of complete sentences are used to formulate variables.


11
Who
To Whom
What
How
12
Who
To Whom
What
How
13
Who
To Whom
What
How
14
Who
To Whom
What
How

A complete interaction sequence will take two or more frames showing at least the initiation of an interaction and the response to that initial interaction. An example of an interaction sequence is shown below.

Teacher: "Johnny, what is two and two?"

The teacher (T in the Who column) is initiating an interaction with a child (C in the To whom column) by asking a simple question (1Q in the What and How columns). (A more detailed explanation of the codes appears in Appendix D.) This is coded in shorthand as TC1QA. It is coded in the frame as shown below.

Johnny: "It is four."

Johnny (C in the Who column) responds (3A in the What and How column) to the teacher (T in the To whom column). This in shorthand is CT3A. It is coded in the frame as shown below.

Teacher: "That is correct, Johnny."

The teacher (T in the Who column) tells Johnny (C in the To whom column) that she acknowledges (7A in the What and How column) his correct response. This in shorthand is TC7A. It is coded in the frame as shown below.

FIGURE 1: Coded FMO Frames Showing Coding of a Typical Interaction (Stallings & Kaskowitz, 1974; p. 29).

Variables: The COI variables were formed from the 100,000 possible combinations of codes thought important to the study of sponsor implementation (Stallings et. al, 1974). The FMO variables may be made up of a combination of codes or of sentences. For example, one variable composed of code combinations is "Child to Adult, Verbal" (Variable 472c), which is operationally defined as any child code (C, D, 2, S, L) in the Who category, any adult code (T, A, V) in the To whom category, and any verbal code (1, 2, 3, 4, 5, 6, 7, 8, 9) in the What category. As with many of the variables, the How need not be present. A variable composed of a sentence combination is "Child Responds to Adult Open-Ended Question" (Variable 499c), defined by two successive sentences: a sentence in which an adult code (T, A, or V) is the Who, a child code (C, D, 2, S, L) is the To whom, and an open-ended question (2) is coded in the What category; another sentence follows in which a child code is the Who, and adult code is the To whom, and the response code (3) is the What. The "a" or "c" located after the variable identification number indicates whether the variable is derived from adult focus or child focus observation. In all, there are 602 variables with variables 1-17 based on the CSI, variables 18-60 based on the PEI, variables 61-262 based on the CCL, variables 263a-301a and 302c-340c based on the PRE, and variables 341a-471a and 472a-602c based on the FMO. For a more detailed discussion on the formulation of the variables the reader is referred to Stallings et. al. (1974; pp. 41-44).

Limitations of the instrument and variables must be considered in interpreting the results of classroom observation analyses. First, the set of variables was developed with the goal of assessing the classroom processes in a variety of different Follow Through models. In producing variables that would have some application to all models, many model-specific features were neglected. The variables in some cases are very general, overlapping and somewhat ambiguous. Second, some models are easily described in behavioral terms and, therefore, more readily assessed by the COI. However, components of the cognitive growth and self-actualizing models are less adaptable to behavioral descriptions since they often involve judgments of speakers' intents and of social or cognitive contexts. The COI, then, assesses only a pre-selected and limited range of potential classroom processes.

Methodology of National Follow Through Implementation Studies

Assessment of the implementation of the various Follow Through models has been reported in Stallings (1975). Only the Stallings report of 1973 data included evaluation of a MAP-FT project. The methodology of that report was applied to the present study, and is described below.

A number of problems were encountered in the selection of the methodological approach used. First, in order to assess implementation, it was necessary for the sponsors of the Follow Through models to describe their particular models in terms of what was essential to each and how their classrooms differed from traditional classrooms. The sponsors were asked to consider all facets of the classroom, such as the environment, materials, interactions, etc.. Upon completion of the description phase, each sponsor (along with SRI consultants) selected variables, from the COP section of the COI, that it predicted would occur frequently in its own classrooms. These variables served as behavioral indicators of the sponsor's instructional objectives and theoretical model.

Next, the method to be used to determine the degree of implementation was selected. Since Follow Through models are considered alternatives to traditional classrooms, the standard of comparison was the Non-Follow Through classrooms. For the Stallings (1973) analyses, a non-parametric scaling technique was used because the frequencies of variables in the NFT classrooms deviated from a normal distribution. For each of the sponsor-specific variables, the appropriate (Adult and Child focus) NFT classroom mean frequencies were rank ordered and then divided into four equal parts or quartiles. "Implementation scores" (1-4) for each FT classroom were created by assigning a NFT quartile value to the FT classroom mean frequency. The result was a quartile score for each variable which "represents the position of the Follow Through classroom mean or value relative to the distribution of the Non-Follow Through classroom means or values (Stallings et. al., 1974; p. 100)." Finally, the implementation scores for all sponsor-specific variables in each FT classroom were combined to compute the "classroom total implementation score." Each total implementation score represents the percentage of NFT scores exceeded by FT. The possible range is 25-100%, with the mid-point of the NFT distribution as 50%. This restricted range simply reflects the fact that the lowest quartile score is "1", not "0".

Applying this procedure to data obtained during spring 1972 (in grades 1-3) in the MAP-FT classrooms of Pickens County, Georgia, Stallings reported a total implementation score of 85% for MAP-FT (the variables used to derive this score may be found in Stallings (1973; pp. 142-147)). That is, the frequencies of MAP sponsor-specific variables in MAP classrooms exceeded 85% of the national norm NFT classrooms. The classroom processes of MAP-FT differed from the NFT classrooms. The implementation scores for the 11 other sponsors included in this study ranged from 83.1% (Bank Street to 93.2% (University of Oregon). The reader should note that a score of 50% for a FT model means that the sponsor implementation score of the average FT classroom exceeded 50% of the scores in NFT classrooms. However, by definition, the implementation scores of one half of NFT classrooms *also* exceed 50%. *An implementation* score of 50%, then, indicates no difference between FT and NFT classrooms. Implementation scores above 50% indicate that FT classrooms conform more to sponsor goals than do NFT. Scores below 50% indicate that FT classrooms are *less* sponsor-like than are NFT classrooms.

In 1972-73, SRI collected data on seven Follow Through models; however, MAP-FT was not included (Stallings, et. al., 1974). Modifications were made to the earlier method of computing implementation scores. As before, a non-parametric scaling technique and the NFT distribution as a standard of comparison was used with, however, that distribution divided into quintiles rather than quartiles. The mid-point of the comparison NFT distribution is 60% and the scores range from 20-100%. Scores above 60%, then, mean that FT classrooms implement sponsor goals more than do NFT. Scores below 60%, of course, imply the reverse. The range of implementation scores of the seven sponsors studied was 73.6% (University of Arizona) to 84.6% (University of Kansas) for first grade and 69.5% (Bank Street) to 83.3% (University of Kansas) for third grade. In all cases the implementation scores for FT first grades were higher than FT third grades. In the study described below Stalling's quintile scoring format, using the same National NFT comparison groups was adopted. Thus, comparisons could be made between MAP-FT and those sponsors described in the Stallings report.

METHOD

Sample

Project sites: The MAP-FT sites considered in the present investigation are: Gulfport, Mississippi; Pickens County, Georgia; and McCormick County, South Carolina. All three sites were involved in MAP-FT operations with a grade 1 class in fall, 1969. Grade three classrooms were initiated in fall, 1970, in Pickens County, Georgia, and Gulfport, Mississippi. In McCormick County, grade 3 classes began in fall, 1971. No COI data were collected in three other projects sites implementing the MAP model (Martins Ferry, Ohio; Lee County, Virginia; and Pocatello, Idaho).

Gulfport is a city of approximately 45,000, about one-sixth of the population in the Gulf Coast Region; the mean family income of this community, which includes 18% non-white, is near $8,000. A total of approximately 1000 children are enrolled in grades one through three, 27% of which are non-white. The counties of Pickens and McCormick are basically rural communities. Approximately 10,000 people, of which 3.5% are non-white, reside in the central North Georgia county of Pickens, with a mean family income of about $7,500. There are approximately 600 children enrolled in grades one through three. McCormick County, in southwestern South Carolina, has about 8,000 residents, with about 60% non-white; the mean family income is about $6,000. Grade 1-3 have approximately 500 children.

Sample Characteristics: Only first and third grade classrooms, having COI data collected during spring, 1975, were included. Grade 1 (6 MAP-FT, 4 local NFT) and grade 3 (11 MAP-FT, 5 local NFT) classrooms were randomly selected under a restriction that FT and NFT teachers must have had at least one prior year of teaching in their respective programs. Children within these classrooms (Grade 1: 30 MAP-FT, 20 local NFT; Grade 3: 42 MAP-FT, 20 local NFT) were randomly selected for observation with the restriction that they had entered the FT or NFT program in K or grade 1, had taken the Metropolitan Readiness Test (MRT), had not repeated a grade, and had remained in the program to date-of-observation. Both MAP-Follow Through and Non-Follow Through classrooms were examined in each community, except in McCormick where there was only one NFT classroom at each grade level. Three sets of sample characteristics are presented for both grade levels in Tables 1-6: teacher characteristics (age, FT experience, and total teaching experience); characteristics of all the children in the selected classrooms (entering Metropolitan Readiness Test (MRT), age, income, race, and sex); and characteristics of the sample of children actually observed (MRT, age, income, race, and sex).

Grade 1: Teacher characteristics are presented in Table 1. The data are reported as means which are based upon two teachers in each community.

TABLE 1

Grade 1 - Teacher Characteristics[1]

Community/ Program	N	Mean Age	Mean No. Yrs. in MAP	Mean No. Yrs. Tchg.
Pickens - FT	2	42.5	3.5	19.0
NFT	2	56.5	.0	33.0
Gulfport - FT	2	45.0	4.0	19.5
NFT	2	38.5	.0	9.25
McCormick - FT	2	43.5	4.5	14.5

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[1] As of Spring, 1975

The Follow Through teachers in the three communities are similar in age to the Non-Follow Through teachers.

Table 2 summarizes the characteristics of all children in the sampled classrooms. Both age and MRT are presented as means, whereas income, race and sex are reported as percent. Generally, the children in the FT classrooms are older than those in the NFT classrooms.

TABLE 2

Grade 1 - Classroom Characteristics[1]

Community/ Program	N	Cohort	Means			Income (%)			Race (%)				Sex (%)		
			Age	MRT	%ile	Low	Unk	NonLow	W	B	Unk	O	M	F	Unk
Pickens - FT	60	VI	7.03	52.25	44	75.0	10.0	15.0	81.7	8.3	10.0		50.0	50.0	
Pickens - NFT	61	VI	6.87	68.72	77	13.1	59.0	34.1	86.9	1.6	11.5		62.3	36.1	1.6
Gulfport - FT	44	VI	7.00	56.87	55	22.7	43.2	34.1	20.5	75.0	4.5		54.5	45.5	
Gulfport - NFT	52	VI	6.87	51.44	42	21.2	57.7	21.2	30.8	11.5	57.7		38.5	61.5	
McCormick - FT	55	V	6.95	67.58	75	76.4	7.3	16.4	18.2	72.7	7.3	1.8	45.6	56.4	

[1] Based on all children enrolled in the sampled classrooms

O = Other
W = White
B = Black
Unk = Unknown

Table 3 summarizes the same characteristics in the same format as the above for the children observed via the COI. Very little difference between the children in the two programs exists; however, mean MRT scores differ. With the exception of the children in McCormick, the NFT children have a higher mean MRT score than their FT comparison groups. **The majority of the FT children across all communities are classified as low income and black with almost an equal percent of females and males.**

TABLE 3

Grade 1 - Characteristics of the Children Observed

Community/ Program	N	Cohort	Means			Income %		Race &		Sex %	
			Age	MRT	%ile	Low	NonLow	W	B	M	F
Pickens - FT	10	VI	6.79	46.50	33	90	10	90	10	50	50
Pickens - NFT	10	VI	6.95	75.90	89	40	60	100	00	60	40
Gulfport - FT	10	VI	6.80	50.20	40	30	70	30	70	50	50
Gulfport - NFT	10	VI	6.79	55.40	51	60	40	80	20	50	50
McCormick -FT	10	V	6.85	68.20	77	100	0	0	100	30	70

Grade 3: Table 4 summarizes the Grade 3 teacher characteristics reported as medians.

TABLE 4

Grade 3 - Teacher Characteristics[1]

Community/ Program	N	Median Age	Median No. Yrs. in MAP	Median No. Yrs. Tchg.
Pickens - FT	4	27.0	2.5	3.5
Pickens - NFT	2	46.0	0	11.50
Gulfport - FT	5	32.0	5.0	7.0
Gulfport - NFT	3	32.0	0	9.0
McCormick - FT	2	54.0	4.0	22.5

[1] As of Spring, 1975

With the exception of McCormick, Follow Through teachers have less total teaching experience than the Non-Follow Through teachers.

Table 5 summarizes the characteristics of all Grade 3 children in the sampled classrooms. The FT children are slightly older and their mean MRT scores, with the exception of McCormick FT, are lower. For the data available, the majority of FT children are from low income families and white, with approximately an equal number of males and females in both programs.

TABLE 5

Grade 3 - Classroom Characteristics[1]

Community/ Program		N	Cohort	Means			Income (%)			Race[2] (%)				Sex (%)		
				Age	MRT	%ile	Low	Unk	NonLow	W	B	Unk	O	M	Unk	F
Pickens -	FT	104	IV	9.19	59.38	59	68.3	2.9	28.8	91.3	6.7	1.9		46.2		53.8
	NFT	46	IV	8.80	66.1	73	2.2	71.7	26.1	95.7	2.2	2.2		54.3	2.2	43.5
Gulfport -	FT	124	IV	9.00	49.07	38	23.4	42.7	33.9	66.9	29.8	3.2		49.2	45.2	5.6
	NFT	73	IV	8.93	56.89	53	12.3	58.9	28.8	27.4	13.7	58.9		47.9	1.4	50.7
McCormick -	FT	55	III	9.03	65.37	71	96.4	3.6	14.5	85.5				41.8		58.2

[1] Based on all children enrolled in the sampled classrooms

[2] Unk = Unknown
O = Other
W = White
B = Black

Table 6 summarizes the characteristics of the Grade 3 children observed during spring, 1975. The Follow Through children are somewhat older and have a slightly lower mean MRT score than the Non-Follow Through children. In addition, the majority of the Follow Through children are from low income families, black and female.

TABLE 6

Grade 3 - Characteristics of the Children Observed

Community/ Program			Means			Income (%)		Race (%)		Sex (%)	
	N	Cohort	Age	MRT	%ile	Low	NonLow	W	B	M	F
Pickens - FT	16	IV	9.28	58.60	57	75.0	25.0	12.5	87.5	31.3	68.7
NFT	6	IV	8.69	64.60	69	0.0	100.0	0.0	100.0	50.0	50.0
Gulfport - FT	16	IV	8.93	52.88	44	31.3	68.7	43.8	56.3	25.0	75.0
NFT	14	IV	8.80	56.57	53	21.4	78.6	21.4	78.6	35.7	64.3
McCormick - FT	10	III	8.86	70.68	81	100.0	0.0	90.0	10.0	30.0	70.0

Procedures

Data Collection: Observation data were obtained by specially trained observers. Descriptions of training procedures and actual progress of session can be found in the Spring, 1975 - Classroom Observation Documentation (MAP Staff, 1975).

Data Reliability: Stallings et al, (1975) assessed the reliability of the observation data in three ways: 1) the uniformity of the data; 2) day-to-day stability in classroom procedures; and 3) observer consistency in coding prepared videotapes of classroom activities. The data collected were reported to be reasonably uniform; the day-to-day variability was stable with reliability being .70 or more, and the overall reliability for all observers was .78 for the What codes and .81 for the How codes represented on the videotape skits.

The reliability of the MAP-FT observation data has not yet been assessed by statistical analysis; however, as reported by the COI trainers, all observers met the minimum requirements set by Stallings for observers. Spot checks of the observer's booklets and coding indicated that with one possible exception in Pickens County the data were consistent and logical.

MAP - Appropriate Variables: Specific variables considered critical to the implementation of the MAP-FT classroom learning environment model were selected through a Q-sort technique (Perreault & Gash, 1974). A sample of Lee County, Virginia, Follow Through teachers and members of the Athens, Georgia, based MAP Field Operations Instructional Team were asked to sort all 1973 SRI variables (Stallings, 1973) into three groups: high, moderate, and low expected frequency (with respect to the MAP model). Thirty-four FMO MAP-appropriate variables were identified and later transformed into the corresponding 1974 SRI variables (Stallings et al, 1974) for use in this study. Two of the variables were discarded due to misinterpretation by the Q-sorters; of the remaining 32 variables, 16 were Adult, and 16 Child, focus variables (See Appendix C).

Data Analysis: The Stallings' quintile scoring format (see page 10) was used to produce a total implementation score for each MAP-Follow Through and local Non-Follow Through classroom. The average of these scores was used as the mean total implementation score for each program (FT and NFT) within each community.

The three questions to be answered in this study were examined separately:

1) Implementation differences among the Follow Through classrooms of the three communities were examined using two one-way analyses of variance applied to the Grade 1 and Grade 3 scores separately.
2) Implementation differences between MAP-Follow Through and local Non-Follow Through classrooms and program - community interactions were tested with two two-way analyses of variance, applied to Grade 1 and Grade 3 separately.
3) MAP-FT classroom implementation at Grades 1 and 3 was compared to the national sample of traditional Non-Follow Through classrooms using t-tests for independent means. By definition of the scoring system, the national Non-Follow Through mean was 60%.

In addition, diffusion of the MAP-FT classroom processes to local Non-Follow Through classrooms was assessed by comparing the results of the second analysis with results of additional t-tests between local NFT classrooms and the national NFT comparison group.

RESULTS

Grade 1

The mean and variance of total implementation scores for the first grades of each program in the three communities are summarized in Table 7.

TABLE 7

Mean and Variance of Total Implementation Scores for the First Grade of Each Program in Three Communities

Community/ Program	N[1]	Implementation Score (%)	Variance
Pickens - FT	2 (10)	62.81	.0361
Pickens - NFT	2 (10)	49.06	.0004
Gulfport - FT	2 (10)	63.43	.0103
Gulfport - NFT	2 (10)	62.81	.0009
McCormick - FT	2 (10)	71.87	.0094
National - NFT	35 (140)	60.00	

[1] Number of classrooms (Number of children)

McCormick obtained the highest FT implementation score followed by the Gulfport and Pickens FT programs. Both Pickens and Gulfport NFT groups scored lower than their FT comparisons.

Community Comparison of MAP-FT Implementation: Examination of homogeneity of variance using Cochran's test (Winer, 1971; p. 207) yielded a C of .6469 ($p > .05$) indicating sufficient homogeneity. A one-way analysis of variance across communities ($F=.275$, $p < .75$) suggested that the MAP-FT model was equally well implemented in the first grade of the three communities.

MAP-FT Implementation Compared to Local NFT: Cochran's test on the within cell variances yielded a C of .7568 (p > .05). No differences were found for the main effects of program (F = .863, p > .25) or Community (F = .719, p > .25). The Program X Community effect also indicated no differences (F = .719, p > .25). Again, caution must be taken in interpreting the results. Tentative support for the similarity of the processes occurring in MAP-FT and local NFT first grade classroom is suggested. The results may be a function of diffusion of the MAP-FT classroom processes to local NFT classrooms.

MAP-FT Implementation Compared to National NFT: To discern the differences in implementation scores between each MAP-FT community and the national NFT sample, two-group t-tests were used. Highly significant results were found favoring both McCormick FT (t=9.930, df=35, p < .005) and Gulfport FT (t=2.75; df=35, p < .005). For Pickens FT, the difference approached significance (t=1.204, df=35, p < .15). Since the National NFT sample is composed of a wide range of traditional classrooms (n=35 first grade classrooms) from around the United States, the distinctiveness of the MAP-FT classroom processes is supported.

Diffusion Effects: The possible effect of diffusion among first grade classrooms gains support from the two previous analyses. First, no statistical differences were found between FT and local NFT first grade classrooms in Pickens and Gulfport suggesting the similarity of the instructional processes occurring in both types of classrooms. Second, the MAP-FT classrooms do differ significantly from the national sample of traditional classrooms. To further investigate the possibility of diffusion effects, additional t-tests were computed comparing local NFT and National NFT classrooms. The analysis yielded significant differences for both Gulfport NFT ($t = 7.41$, $df = 35$, $p < .005$), and for Pickens NFT ($t = 40.48$, $df = 35$, $p < .005$); but for the latter a greater mean value resulted for the National NFT group. A plausible conclusion from the above analyses is that the greater similarity of instructional processes of the local Gulfport NFT classrooms to the MAP-FT classrooms than to the traditional National NFT classroom is that "diffusion" of the MAP program to NFT classes has occurred. On the other hand, the instructional processes of the Pickens NFT classrooms are somewhat less MAP-like than both MAP-FT and National NFT classrooms. That is, they are neither typical of what may be described as a "traditional classroom" or of MAP-FT classrooms. A diffusion effect, therefore, is not apparent in this community.

Grade 3

The mean total implementation scores and variances for the third grade FT and NFT classrooms in the three communities are presented in Table 8. Consistent with the prior analyses, McCormick obtained the highest scored, followed by Gulfport and Pickens. The Pickens NFT classrooms scored higher (i.e., were more MAP-like) than both the local FT comparison group and the Gulfport NFT, but were lower than Gulfport FT.

TABLE 8

Mean and Variance of Total Implementation Scores for the Third Grade of Each Program in three Communities

Community/ Program	N[1]	Implementation Score (%)	Variance
Pickens - FT	4	59.33	.0051
Pickens - NFT	2	62.81	.0009
Gulfport - FT	5	64.75	.0068
Gulfport - NFT	3	58.12	.0001
McCormick - FT	2	73.12	.0001
National - NFT	36	60.00	

[1] Number of classrooms

Community Comparison of MAP-FT Implementation: Cochran's test for homogeneity of variance yielded a C of .568 ($p > .05$) indicating sufficient degree of homogeneity. A one-way analysis of variance ($F = 2.307$, $df = 2,8$, $p > .10$) is suggestive of differential implementations among the FT classrooms of the three communities.

MAP-FT Implementation Compared to Local NFT: Cochran's test for homogeneity of variance resulted in a C of .5271 ($p > .05$) indicating that the assumption is tenable. No differences were found for the main effects of Program ($F = .402$, $df = 1, 10$; $p > .50$), or Community ($F = .180$, $df = 1, 10$, $p > .50$). Neither was there a significant Program X Community interaction ($F = 1.805$, $df = 1, 10$, $p > .25$). In regards to instructional processes, the MAP-FT and local NFT classrooms in the two communities of Pickens and Gulfport appear to be similar. The possibility of diffusion of the MAP-FT classroom processes to local grade 3 NFT classrooms is examined below.

MAP-FT Implementation Compared to National NFT: Differences between MAP-FT classrooms in each community and the national NFT sample were investigated using t-tests. Third grade implementation in both McCormick ($t = 131.25$, $df = 36$, $p < .005$) and Gulfport FT ($t = 2.70$, $df = 37$, $p < .005$) was significantly more MAP-like than the national NFT sample. For Pickens FT, the analysis showed no significant differences ($t = .435$, $df = 36$, $p > .50$), suggesting a similarity in instructional processes between the MAP-FT and National NFT classrooms.

Diffusion Effects: The analyses above do not provide support for the existence of a diffusion effect in third grade. The instructional processes of local NFT classrooms were not significantly different from their FT counterparts in Pickens and Gulfport, and the Gulfport MAP-FT classrooms were *more* MAP-like than the National NFT classrooms. However, Gulfport NFT classrooms were *less* MAP-like than National NFT classrooms ($t = 17.88$, $df = 36$, $p < .005$). In Pickens, the MAP-FT classrooms were not different from the National NFT mean, although local NFT classrooms were more MAP-like than National NFT ($t = 5.76$, $df = 35$, $p < .005$).

With the data in Table 8 in view, the above analyses suggest that the NFT classrooms in Pickens approach the MAP ideal more than did either the MAP-FT or National NFT classrooms. In general, the data suggest that neither Pickens nor Gulfport local NFT classrooms are "typical" traditional (i.e., national NFT) classrooms.

MAP-FT COMPARED TO NATIONAL FT SPONSORS

Although Stallings et al (1974) included CCL variables in addition to FMO variables in assessing implementation of the seven FT models (while assessment of MAP-FT implementation was based solely on FMO variables) direct comparisons can be made between Stallings' findings and those of MAP-FT. For the purpose of comparing MAP-FT scores to Stallings' scores, implementation scores based only on FMO variables were computed for the seven sponsors examined in her report. The FMO-based implementation score of each model, the original Stallings' score (including CCL variables), and the theoretical classification (Maccoby et al, 1970) of the model, are presented in Table 9.

TABLE 9

Implementation Scores for all Sponsors
Based on FMO Variables Only

Sponsors	Classification[1]	Mean Implementation Scores			
		Grade 1		Grade 3	
		FMO	(+CCL)	FMO	(+CCL)
University of Kansas	Behavior Modification	83.33	(84.60)[2]	84.24	(83.30)
University of Oregon	Behavior Modification	74.16	(78.20)	73.95	(76.50)
High/Scope	Cognitive Growth	73.27	(76.60)	66.26	(75.00)
Education Dev. Center	Self Actualization	71.67	(76.90)	74.90	(75.40)
Bank Street	Self Actualization	69.70	(74.80)	66.67	(69.50)
University of Arizona	Self Actualization	69.57	(73.60)	67.33	(72.30)
University of Georgia MAP-FT	Cognitive Growth	66.04	(NA)	64.38	(NA)
Far West Laboratory	Cognitive Growth/ Self Actualization	60.25	(78.30)	58.40	(76.40)

[1] Maccoby et al, 1970

[2] From Stallings et al, 1974: Implementation scores based on CCL and FMO variables.

Consistent with Stallings' results, the Behavior Modification models have the highest implementation scores with Cognitive Growth and Self-Actualization models following. This order persists with the addition of the implementation scores of the MAP-FT Cognitive Growth model. Comparing models' implementation scores for FMO variables alone and those composed of both CCL and FMO variables, certain generalizations can be made. First, implementation for most sponsors is slightly greater in their first grades than their third grades. Second, there is a decrease in the implementation scores when they are based on FMO variables only, suggesting that classroom activities, materials, and environments are an integral part of the sponsor's innovations. Third, all sponsors, with the exception of Far West Laboratory, exceed at least half of the National NFT classrooms (NFT mean = 60.00) in the instructional processes occurring. Finally, MAP-FT first and third grades are quite similar to the scores obtained by the High Scope model which is similar in theoretical background to the MAP-FT model.

DISCUSSION

The results of the present investigation add to the understanding of the processes occurring in the MAP-FT and local NFT classrooms. For both first and third grades in the three communities, the degree of implementation of the MAP-FT program are quite similar. The lack of differences in total implementation among both rural and urban, ethnically distinct FT communities with teachers of varying experience, leads one to expect that the MAP model can be implemented in communities having diverse characteristics, thus, adding support for the model's transportability.

The range of implementation scores among the three communities might be explained by a number of possible implementation characteristics. For example, the relatively high implementation score in McCormick, Grade 1, may be a function of greater MAP-FT teaching experience. Similarly, the relatively low implementation score in Pickens, Grade 1, may be a function of less MAP-FT teaching experience and more traditional teaching experience. It may also be relevant that all classrooms in McCormick adopted the FT programs, indicating an administrative commitment to the program.

Differences between MAP-FT and local NFT within each community were expected since the MAP-FT model was designed to differ in specific ways from the traditional classroom. One explanation for the present findings of no difference in Pickens and Gulfport is that within these communities, the NFT teachers have adopted MAP-FT teaching strategies, attenuating the differences in observable classroom processes. Support for this effect in Gulfport, Grade 1, may be implied from the MAP-FT and local NFT comparisons with the National NFT. The low Pickens, Grade 3, implementation scores in MAP-FT classrooms do not allow us to conclude that implementation was diffused to local NFT classrooms, though the latter were more MAP-like than the National NFT sample. However, observer reliability was judged low for this community and grade level. This possibility is borne out by results of a study of child outcomes in which achievement and cognitive scores of MAP-FT children in Pickens and Gulfport were relatively greater, when compared to a National NFT sample, than when compared to the local NFT sample (Stebbins, et al, 1977).

A second explanation for the lack of MAP-FT local NFT differences arises from the nature of the Classroom Observation Instrument. The MAP-appropriate variables used in this preliminary study may be operationally defined in terms too general to allow for adequate discriminations to be made. Also, the FMO derived variables used here do not take into account the classroom materials, activities, and other environmental contextual factors critical to the model that would distinguish FT from NFT classes. The Stallings' FMO variables may simply not be sensitive to the underlying cognitive processes taking place in the MAP-FT classrooms. Two attempts to examine this issue are in progress. First, because of the generality of the Stallings' MAP-Appropriate variables as they now exist, a new series of COI variables thought to represent the cognitive aspects of the model -- specifically, social interactions promoting disequilibration -- have been defined and operationalized and will be examined in future reports. Second, initial steps have been taken to relate both the Stallings' COI variables and the newly constructed set of MAP variables to cognitive outcomes. These analyses will permit more definite conclusions concerning implementation and success of the MAP-FT model.

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CONCLUSIONS

1. Among communities and grade levels, no statistically significant differences were found in the degree of implementation of the MAP-FT model in FT classrooms although the McCormick project consistently achieved the highest fidelity of implementation.
2. No overall differences were found between the MAP-FT and local NFT classrooms.
3. The MAP-FT model does correspond with the planned variation design of the National Follow Through program. MAP-FT classrooms are different from traditional classrooms not within the MAP-FT communities.
4. There is some evidence for diffusion of the MAP-model process to some local NFT classrooms.
5. The transportation and implementation of the MAP-FT model to communities with diverse characteristics appears to have been reasonably successful.
6. The degree of implementation of instructional processes in MAP-FT is comparable to that of other FT sponsors.

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APPENDIX A

CLASSROOM OBSERVATION INSTRUMENT 5670

Classroom Summary Information

FOR NCS USE ONLY				
⓪	⓪	⓪	⓪	⓪
①	①	①	①	①
②	②	②	②	②
③	③	③	③	③
④	④	④	④	④
⑤	⑤	⑤	⑤	⑤
⑥	⑥	⑥	⑥	⑥
⑦	⑦	⑦	⑦	⑦
⑧	⑧	⑧	⑧	⑧
⑨	⑨	⑨	⑨	⑨

DIRECTIONS: Make sure that all of the identifying information has been entered on the Classroom Summary Information form prior to your observation of physical environment. Do not make any stray marks outside the boxes provided in places where written information is required. Make sure you code the classroom summary information form booklet Identification Number in the I. D. grid of all booklets used in the observation.

TEACHER NUMBER							
⓪	⓪	⓪	⓪	⓪	⓪	⓪	⓪
①	①	①	①	①	①	①	①
②	②	②	②	②	②	②	②
③	③	③	③	③	③	③	③
④	④	④	④	④	④	④	④
⑤	⑤	⑤	⑤	⑤	⑤	⑤	⑤
⑥	⑥	⑥	⑥	⑥	⑥	⑥	⑥
⑦	⑦	⑦	⑦	⑦	⑦	⑦	⑦
⑧	⑧	⑧	⑧	⑧	⑧	⑧	⑧
⑨	⑨	⑨	⑨	⑨	⑨	⑨	⑨

Grade
Ⓚ
①
②
③
Ⓜ

OBSERVER NUMBER			
⓪	⓪	⓪	⓪
①	①	①	①
②	②	②	②
③	③	③	③
④	④	④	④
⑤	⑤	⑤	⑤
⑥	⑥	⑥	⑥
⑦	⑦	⑦	⑦
⑧	⑧	⑧	⑧
⑨	⑨	⑨	⑨

TODAY'S DATE					
MO.		DAY		YR.	
⓪	⓪	⓪	⓪	⓪	⓪
①	①	①	①	①	①
②	②	②	②	②	②
③	③	③	③	③	③
④	④	④	④	④	④
⑤	⑤	⑤	⑤	⑤	⑤
⑥	⑥	⑥	⑥	⑥	⑥
⑦	⑦	⑦	⑦	⑦	⑦
⑧	⑧	⑧	⑧	⑧	⑧
⑨	⑨	⑨	⑨	⑨	⑨

I. D. NUMBER			
⓪	⓪	⓪	⓪
①	①	①	①
②	②	②	②
③	③	③	③
④	④	④	④
⑤	⑤	⑤	⑤
⑥	⑥	⑥	⑥
⑦	⑦	⑦	⑦
⑧	⑧	⑧	⑧
⑨	⑨	⑨	⑨

Teacher ____________________

School ____________________

City ____________________

Observer ____________________

CLASSROOM SUMMARY INFORMATION

⓪ ① ② ③ ④ Number of teachers that regularly work in the classroom.

⓪ ① ② ③ ④ Number of aides that regularly work in the classroom.

⓪ ① ② ③ ④ Number of volunteers/visitors present today.

Classroom Summary Information (Cont.)

A		B	
⓪	⓪	⓪	⓪
①	①	①	①
②	②	②	②
③	③	③	③
④	④	④	④
⑤	⑤	⑤	⑤
⑥	⑥	⑥	⑥
⑦	⑦	⑦	⑦
⑧	⑧	⑧	⑧
⑨	⑨	⑨	⑨

A. Number of children enrolled

B. Number of children present today

Total Class Duration

○ 2½ hours
○ 3 hours
○ 3½ hours
○ 4 hours
○ 4½ hours
○ 5 hours
○ 5½ hours
○ 6 hours
○ 6½ hours
○ 7 or more hours

NCS Trans-Optic S387A-32

Physical Environment Information
(Mark all that apply.)

For each of the items below, mark all that apply:

① Present
② Used today

Seating Patterns:
○ Movable tables and chairs for seating purposes.
○ Stationary desks in rows.
○ Assigned seating for at least part of the day.
○ Children select their own seating locations.
○ Teacher assigns children to groups.
○ Children select their own work groups.

GAMES, TOYS, PLAY EQUIPMENT
① ② small toys (trucks, cars, dolls and accessories
① ② puzzles, games
① ② wheel toys
① ② small play equipment (jumpropes, balls)
① ② large play equipment (swings, jungle gym)
① ② children's storybooks
① ② animals, other nature objects
① ② sandbox, water table
① ② carpentry materials, large blocks
① ② cooking and sewing supplies

INSTRUCTIONAL MATERIALS
① ② Montessori, other educational toys
① ② children's texts, workbooks
① ② math/science equipment, concrete objects
① ② instructional charts

AUDIO, VISUAL EQUIPMENT
① ② television
① ② record or tape player
① ② audio-visual equipment

GENERAL EQUIPMENT, MATERIALS
① ② children's own products on display
① ② displays reflecting children's ethnicity
① ② other displays especially for children
① ② magazines
① ② achievement charts
① ② child-size sink
① ② child-size table and chairs
① ② child-size shelves
① ② arts and crafts materials
① ② blackboard, feltboard
① ② child's own storage space
① ② photographs of the children on display

OTHER
① ② please specify

MAKE NO

STRAY MARKS

IN BLANK AREAS

41

SRI

CLASSROOM OBSERVATION PROCEDURE

CLASSROOM CHECK LIST (be sure to code EVERYONE in the class)

			ONE CHILD	TWO CHILDREN	SMALL GROUPS	LARGE GROUPS
1. Snack, lunch		T	①②③	①②③	①②③④	①②
		A	①②③	①②③	①②③④	①②
		V	①②③	①②③	①②③④	①②
		i	①②③	①②③	①②③④	①②
2. Group time		T	①②③	①②③	①②③④	①②
		A	①②③	①②③	①②③④	①②
		V	①②③	①②③	①②③④	①②
		i	①②③	①②③	①②③④	①②
3. Story Music Dancing		T	①②③	①②③	①②③④	①②
		A	①②③	①②③	①②③④	①②
		V	①②③	①②③	①②③④	①②
		i	①②③	①②③	①②③④	①②
4. Arts, Crafts		T	①②③	①②③	①②③④	①②
		A	①②③	①②③	①②③④	①②
		V	①②③	①②③	①②③④	①②
		i	①②③	①②③	①②③④	①②
5. Guessing Games Table Games Puzzles		T	①②③	①②③	①②③④	①②
		A	①②③	①②③	①②③④	①②
		V	①②③	①②③	①②③④	①②
		i	①②③	①②③	①②③④	①②
○ TV ○ Audio-Visual Materials ○ Exploratory Materials ○ Math and Science Equipment ○ Texts, Workbooks ○ Puzzles, Games	6. Numbers Math Arithmetic	T	①②③	①②③	①②③④	①②
		A	①②③	①②③	①②③④	①②
		V	①②③	①②③	①②③④	①②
		i	①②③	①②③	①②③④	①②
	7. Reading Alphabet Lang. Development	T	①②③	①②③	①②③④	①②
		A	①②③	①②③	①②③④	①②
		V	①②③	①②③	①②③④	①②
		i	①②③	①②③	①②③④	①②
	8. Social Studies Geography	T	①②③	①②③	①②③④	①②
		A	①②③	①②③	①②③④	①②
		V	①②③	①②③	①②③④	①②
		i	①②③	①②③	①②③④	①②
	9. Science Natural World	T	①②③	①②③	①②③④	①②
		A	①②③	①②③	①②③④	①②
		V	①②③	①②③	①②③④	①②
		i	①②③	①②③	①②③④	①②
10. Sewing Cooking Pounding Sawing		T	①②③	①②③	①②③④	①②
		A	①②③	①②③	①②③④	①②
		V	①②③	①②③	①②③④	①②
		i	①②③	①②③	①②③④	①②
11. Blocks Trucks		T	①②③	①②③	①②③④	①②
		A	①②③	①②③	①②③④	①②
		V	①②③	①②③	①②③④	①②
		i	①②③	①②③	①②③④	①②
12. Dramatic Play Dress-Up		T	①②③	①②③	①②③④	①②
		A	①②③	①②③	①②③④	①②
		V	①②③	①②③	①②③④	①②
		i	①②③	①②③	①②③④	①②
13. Active Play		T	①②③	①②③	①②③④	①②
		A	①②③	①②③	①②③④	①②
		V	①②③	①②③	①②③④	①②
		i	①②③	①②③	①②③④	①②
14. RELIABILITY SHEET ○						

				ONE CHILD	TWO CHILDREN	SMALL GROUPS	LARGE GROUPS
15. Practical Skills Acquisition			T	①②③	①②③	①②③④	①②
			A	①②③	①②③	①②③④	①②
			V	①②③	①②③	①②③④	①②
			I	①②③	①②③	①②③④	①②
16. Observing			T	①②③	①②③	①②③④	①②
			A	①②③	①②③	①②③④	①②
			V	①②③	①②③	①②③④	①②
			I	①②③	①②③	①②③④	①②
17. Social Interaction	Ob ①	Ⓣ	T	①②③	①②③	①②③④	①②
	②	Ⓐ	A	①②③	①②③	①②③④	①②
	③	Ⓥ	V	①②③	①②③	①②③④	①②
			I	①②③	①②③	①②③④	①②
18. Unoccupied Child			T	①②③	①②③	①②③④	①②
			A	①②③	①②③	①②③④	①②
			V	①②③	①②③	①②③④	①②
			I	①②③	①②③	①②③④	①②
19. Discipline			T	①②③	①②③	①②③④	①②
			A	①②③	①②③	①②③④	①②
			V	①②③	①②③	①②③④	①②
			I	①②③	①②③	①②③④	①②
20. Transitional Activities		Ⓣ	T	①②③	①②③	①②③④	①②
		Ⓐ	A	①②③	①②③	①②③④	①②
		Ⓥ	V	①②③	①②③	①②③④	①②
			I	①②③	①②③	①②③④	①②
21. Classroom Management		Ⓣ	T	①②③	①②③	①②③④	①②
		Ⓐ	A	①②③	①②③	①②③④	①②
		Ⓥ	V	①②③	①②③	①②③④	①②
			I	①②③	①②③	①②③④	①②
22. Out of Room		Ⓣ	T	①②③	①②③	①②③④	①②
		Ⓐ	A	①②③	①②③	①②③④	①②
		Ⓥ	V	①②③	①②③	①②③④	①②
			I	①②③	①②③	①②③④	①②

NUMBER OF ADULTS IN CLASSROOM ⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

PREAMBLE

Focus Person Codes:
00 - The original class teacher
1 76 - Child codes
77 - Volunteer
88 - Teacher other than designated class teacher
99 - Aide to teacher

Activity	Focus Person Code
⓪⓪	⓪⓪
①①	①①
②②	②②
③③	③③
④④	④④
⑤⑤	⑤⑤
⑥⑥	⑥⑥
⑦⑦	⑦⑦
⑧⑧	⑧⑧
⑨⑨	⑨⑨

FOCUS PERSON

○ Child
○ Teacher
○ Aide
○ Volunteer

CONTINUATION OF PREVIOUS FOCUS ACTIVITY

○ Yes
○ No

Focus Person's Name and Number

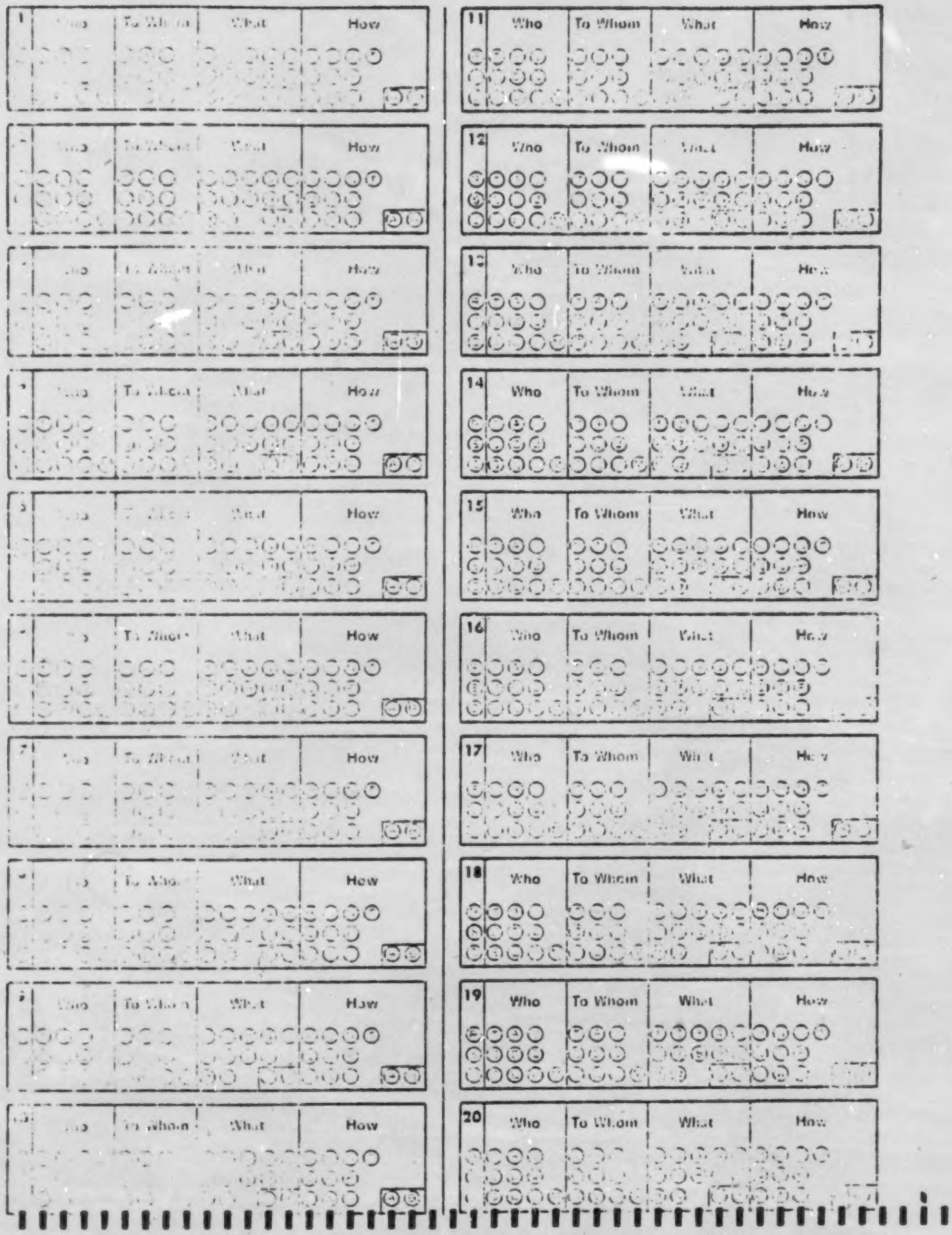
(Do not write outside this box)

Number of Children ①②③④

FOR NCS USE ONLY
⓪⓪⓪⓪⓪
①①①①①
②②②②②
③③③③③
④④④④④
⑤⑤⑤⑤⑤
⑥⑥⑥⑥⑥
⑦⑦⑦⑦⑦
⑧⑧⑧⑧⑧
⑨⑨⑨⑨⑨

ADULT	Directing	Participating	Observing	Not Involved
Teacher	○	○	○	○
Aide	○	○	○	○
Volunteer	○	○	○	○

TIME STARTED		
Hour	Minute	
⑧⑨⑩⑪⑫	⓪①②	⓪①②③④
①②③④⑤	③④⑤	⑤⑥⑦⑧⑨


1 Who To Whom What How
2 Who To Whom What How
3 Who To Whom What How
4 Who To Whom What How
5 Who To Whom What How
6 Who To Whom What How
7 Who To Whom What How
8 Who To Whom What How
9 Who To Whom What How
10 Who To Whom What How
11 Who To Whom What How
12 Who To Whom What How
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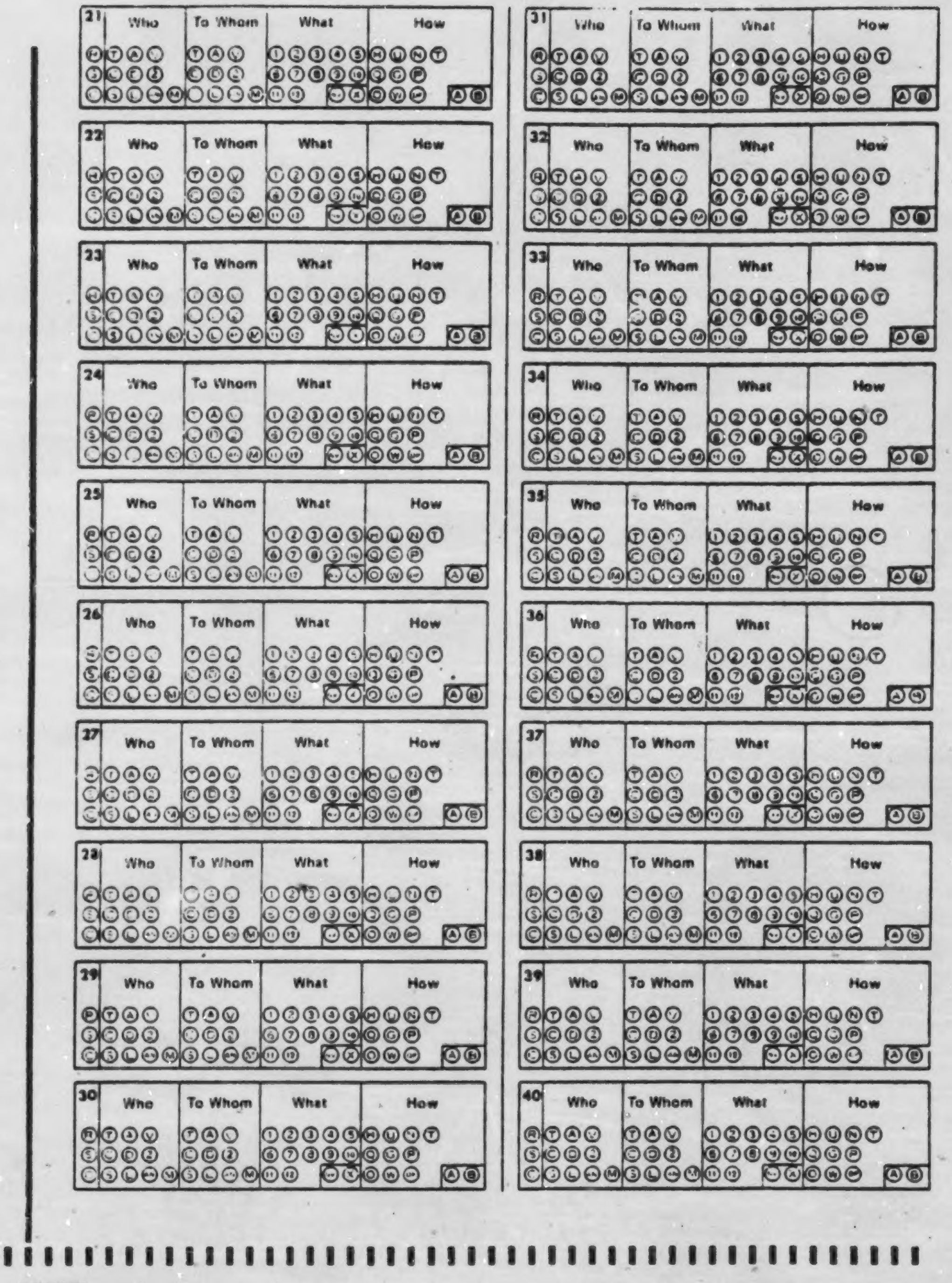
14 Who To Whom What How
15 Who To Whom What How
16 Who To Whom What How
17 Who To Whom What How
18 Who To Whom What How
19 Who To Whom What How
20 Who To Whom What How


21 Who To Whom What How
22 Who To Whom What How
23 Who To Whom What How
24 Who To Whom What How
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27 Who To Whom What How
28 Who To Whom What How
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35 Who To Whom What How
36 Who To Whom What How
37 Who To Whom What How
38 Who To Whom What How
39 Who To Whom What How
40 Who To Whom What How

41	Who	To Whom	What	How

42	Who	To Whom	What	How

43	Who	To Whom	What	How

44	Who	To Whom	What	How

45	Who	To Whom	What	How

46	Who	To Whom	What	How

47	Who	To Whom	What	How

48	Who	To Whom	What	How

47	Who	To Whom	What	How

50	Who	To Whom	What	How

51	Who	To Whom	What	How

52	Who	To Whom	What	How

53	Who	To Whom	What	How

54	Who	To Whom	What	How

55	Who	To Whom	What	How

56	Who	To Whom	What	How

57	Who	To Whom	What	How

58	Who	To Whom	What	How

59	Who	To Whom	What	How

60	Who	To Whom	What	How

61	Who	To Whom	What	How
62	Who	To Whom	What	How
63	Who	To Whom	What	How
64	Who	To Whom	What	How
65	Who	To Whom	What	How
66	Who	To Whom	What	How
67	Who	To Whom	What	How
68	Who	To Whom	What	How

69	Who	To Whom	What	How
70	Who	To Whom	What	How
71	Who	To Whom	What	How
72	Who	To Whom	What	How
73	Who	To Whom	What	How
74	Who	To Whom	What	How
75	Who	To Whom	What	How
76	Who	To Whom	What	How

TIME STOPPED

Hour	Minute
○○○○○	○○○ ○○○○○
○○○○○	○○○ ○○○○○

ACTIVITY CHANGE

1	2	3	4	5	6	7	8	9	10	11
○	○	○	○	○	○	○	○	○	○	○
12	13	14	15	16	17	18	19	20	21	22
○	○	○	○	○	○	○	○	○	○	○

APPENDIX B

COI FIVE MINUTE OBSERVATION: CODE DEFINITIONS, CODING SAMPLE, AND INSTRUMENT

The Who and To Whom Columns

Code	Code Usage
Teacher	The one person who is ultimately responsible for the everyday conduct of the classroom.
Aide	Classroom adults who are regular in their attendance and are paid by Follow Through or the school district.
Volunteer	Any other adult who works in the classroom, such as a parent.
Child	When the focus of an observation is on a specific child, that child is child (all other children are different child). When the focus is on an adult, child refers to any individual child with whom the adult is interacting.
Different Child	A second child is an interaction when the focus child is being observed.
Two Children	Self explanatory.
Small Group	Three to eight children.
Large Group	More than eight.
Animal	Any live animal in the classroom.
Machine	Record player, tape recorder, TV, etc.

The What Column

Code	Code Usage
1 - Command or Request	Code 1 asks for a response free of argument or speculation. There is one expected, acceptable response that is carried out, verbally or nonverbally.
1Q - Direct Question	1Q questions ask for direct recall of material already learned or anticipate a specific or automatic response or a yes/no answer. 1Q questions elicit the following responses: statements of preference, statements of fact, classiflying, and definitions.
2 - Open-ended Question	Code 2 questions are those that allow a free expression of ideas or feelings and invite opinions. Code 2 questions encourage responses that require: interpretation of ideas; relationships of cause and effect; making of comparisons; reasoning; application of previously learned material to a new situation; and describing a process. Code 2 may be phrased as a statement as well as a question.
3 - Response	Code 3 is a response to a command (Code 1), a question or corrective (Code 9). When the response is concerned with basic academic skills, Code 3 is used with A in the "How" column (see definition for A on p. 185); Code 3 is used with B in the "How" column with it follows acknowledgement, praise, or a corrective for behavior (see definition for B on p. 185).
4 - Instruction/ Explanation	Code 4 is used when a teacher or child is: (1) Verbally given new information to others, reviewing lessons, or explaining rules of behavior.

Code	Code Usage
	(2) Nonverbally engaged in demonstrating or in an activity that is productive, organized, or exploratory (including game playing, blocks, dolls, and water play). When the interaction is concerned with the basic skills of reading, writing, spelling, and computation, Code 4 is us with A in the "How" column. If an object is being used as part of self instruction, Code 4 is used with 0 in the "How" column.
5 - General Comments/ General Action	Greetings, personal compliments, social or nontask-related comments and remarks. Irrelevant remarks are also coded 5. Classroom management activities, general movement about the room, mild horseplay, eating, and napping are coded 5NV. (5NV is coded only if there is no talking along with the general action; otherwise, the observer codes the kind of remark that is accompanying the general action.)
6 - Task-Related Comment	Code 6 is used for a statment about the activity or problem at hand in which children and/or adults are involved.
7 - Acknowledge	An indication that a response product or behavior is recognized or agreed with is coded 7. Another form of acknowledgement is to repeat someone else's statement immediately. Code 7 is used with A in the "How" column to indicate acknowledgement of a response having to do with academic subject matter (see definition of Academic on p. 185); Code 7 is used with B in the "How" column to indicate acknowledgement of a response having to do with behavior (see definition of Behavior on p. 185).

Code	Code Usage
8 - Praise	Code 8 is used for praise of a response product or behavior. Praise in academic areas is coded 8 with A in the "How" column (see definition of Academic on p. 185); praise for behavior is coded 8 with B in the "How" column (see definition for Behavior on p. 185).
9 - Corrective Feedback	Corrective Feedback is the attempt to change or modify a response, product or behavior. Code 9 is used when the subject of the observation tries to change another's behavior or corrects his answers or work. Codes G, Q, N and P from the "How" column can be coded with 9 to show the method used to effect behavior modification (see the descriptions of codes in the "How" column, p. 184). Code 9 is used with A in the "How" column to indicate corrective feedback in academic areas and with B in the "How" column to indicate corrective feedback having to do with classroom behavior.
10 - No Response	Code 10 is used for no response when a response is called for and none is forthcoming to complete the interaction. (NV is not coded with 10, because 10 is by definition nonverbal.)
11 - Waiting	Code 11 is used to code the subject of the observation waiting in line or for materials, attention, use of equipment, and activity change. It is also used when the subject is not attending or not involved with anyone or anything. (NV is not coded with 11 because it is nonverbal by definition.)
12 - Observing, Listening	Code 12 is used when the subject of the observation is listening to or watching other people, other activities, TV, slides, films, and the like. (NV is not coded with 12.)

Code	Code Usage
NV - Nonverbal	When the action being coded is not accompanied by words, NV is coded in the What column, along with the other relevant codes.
S - Movement	Code X is used when the subject of the observation moves and for movement of a person with whom the subject is interacting. X can be used with any What code. If the movement is nonverbal and no What code is applicable, code X with 5 (general action).

The How Column

Code	Code Usage
H - Happy	Obvious behavioral expressions of happiness or positive affect, such as laughing, smiling, giggling.
U - Unhappy	Obvious behavior expressions of sadness or unhappiness, such as crying or welling tears.
N - Negative	Expressions of annoyance or anger, negative content (e.g., sarcasm, insults, threats), scolding rejections, destructive behavior.
T - Touch	Whenever one person touches another person, T is coded -- with H to denote a positive touch, with N to denote a negative touch (hit, slap, pinch), and with P to denote a punishing touch from an adult to a child.
Q - Question	Coded with 1 for a direct question and with 9 when corrective feedback is in question form.
G - Guide/Reason	G is coded with 9 when corrective feedback is positive and guides to an alternative activity, approach to a problem, and the like, or when the corrective includes a reason or explanation.
P - Punish	Punish covers a range of adult disciplinary or behavior-modifying techniques, including withholding or privileges, isolation of a child, physical punishment (coded with T). P is coded only with 9.
O - Object	Concrete, inanimate objects used in self instruction. Note: When an object (token, candy, and so forth) is given as a reward for a correct response or good behavior, O is coded with 8.

Code	Code Usage
W - Worth	Child statements of self-worth, self-praise or self-esteem; exclamations of accomplishment; positive remarks about one's self; bragging.
DP - Dramatic Play/Pretend	Describes play acting, puppet shows, and other dramatic presentations, talking to toys or dolls, pretending or making believe, role playing.
	Note: Because there is no code in the Who and To Whom columns to symbolize a toy, doll, or other object of that kind, the example above must be coded as if the child is talking to herslef.)
A - Academic	Interactions that have to do with the development of basic skills as measured on achievement tests; reading (letter and word recognition, vocabulary, pronunciation, grammar), writing, and computation (number recognition, counting, adding, subtracting).
B - Behavior	Describes interactions concerned with classroom behavior (deportment, conduct). B is used only with the feedback codes 7, 8, 9) and with the responses there to.
	Note: If neither A nor B it is assumed that the frame concerns other task-related content.

APPENDIX C

MAP-APPROPRIATE VARIABLES

Adult Focus Variables

355a	Adult open-ended questions to children, nonacademic
356a	Adult open-ended questions to children, academic
376a	Adult instructs a group
394a	All adult knowledgement to children
395a	Adult acknowledgement to children academic
398a	All adult praise to children
402a	Adult praise, academic
404a	Adult praise, other task related
418a	Adults attentive to children, nonacademic
419a	Adults attentive to children, academic
420a	Adults attentive to small group
438a	Adult communication/attention focus: one child
439a	Adult communication/attention focus: two children
440a	Adult communication/attention focus: small group
452a	All adult open-ended questions to children
462a	All positive behavior

Child Focus Variables

472c	Child to adult, all verbal
489c	All child responses
499c	Child responds to adult open-ended question
508c	Child self-instruction
509c	Child self-instruction, academic
510c	Child self-instruction, objects
511c	Child self-instruction, academic, with objects
513c	Child task persistence
516c	Social interaction among children
553c	Positive behavior among children
565c	Dramatic play/pretending
568c	Children engaged in mutual activity
587c	All child task related comments
591c	All child positive affect
593c	All positive behavior
595c	Child attentive to adults or machine

Practical Guide
to the
MATHEMAGENIC ACTIVITIES PROGRAM

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PREFACE

During the past two years, our Follow Through teachers have helped us identify many problems of implementation that highlight the need for a practical guide for teachers of the Mathemagenic Activities Program. Dr. Barber and Dr. Corsini, together with the liaison personnel, appreciate your cooperation in making possible this book.

In the coming year, as well as during our preservice and in-service workshops, we will be using the Guide to acquaint new teachers with our program. Consistent with the philosophy of the University of Georgia Follow Through, we know that your evaluative comments will help us, and many other teachers, as we continue to revise and clarify the essential ingredients of MAP for children during their early years in school.

Follow Through has come to mean partnership relations. We hope you consider yourself a partner in this venture to provide a written guide to the Mathemagenic Activities Program.

CHAPTER I

INTRODUCTION TO FOLLOW THROUGH

What is Follow Through? There is no single or simple answer to this question. We like to think of Follow Through as an idea and a challenge. Basically, Follow Through is an attempt to establish the best educational program possible for your community. This challenge is presented to everyone who becomes involved in Follow Through. Working at making an excellent educational system is not easy. There are no "cookbooks" telling us how to do it--there are no "can't fail" recipes.

Follow Through means different things to different people and means different things to the same person depending upon how long and how involved the person has become in Follow Through. We cannot tell you what Follow Through will or should mean to you; we can only offer the possibility that Follow Through will become a rewarding part of your life. To be realistic, it must be pointed out that some people have found Follow Through unpleasant and have left, but those who have stayed do not regret their decision.

This manual attempts to provide basic factual material about Follow Through and the particular educational approach developed by the University of Georgia--the Mathemagenic Activities Program, often referred to as MAP. We hope this manual will give you a "head start" in learning about Follow Through. We hope to continue to "follow through" with you for several years and help you develop ideas and feelings that answer, for you, "What is Follow Through?"

FOLLOW THROUGH - WHAT, WHY, WHO, HOW

What Is Follow Through?

Follow Through is an experimental educational research program which is designed to meet the needs of low-income children from the first year of public schooling through the third grade in approximately 160 school systems in the U.S.A.

Why Was Follow Through Created?

Follow Through was created to continue the gains which children made in preschool programs such as Head Start or Title I Kindergarten--to Follow them Through the third grade.

Who Created Follow Through?

The United States Office of Education and the United States Office of Economic Opportunity.

What Makes Follow Through Different From Any Other Early Childhood Education Program?

Follow Through is special for two reasons: First, it is designed to meet all the needs of the children--instructional, physical, social and psychological--rather than just concentrating on their instructional needs. Second, Follow Through is a Research and Development program designed to promote continuing research on unsolved problems relevant to the education of young children.

How Does Follow Through Accomplish This?

Follow Through recognizes and makes provisions for a comprehensive program which includes academic instruction, health, nutrition, social services, psychology, staff development, and the involvement of parents and community.

Is Follow Through Only For Children From Low-Income Families?

Follow Through was created to help children from low-income families progress educationally at the optimal rate. So Follow Through is basically for children from low-income families; but, we think, the best way to educate these children is to have them in classrooms with children from all economic levels. The Mathemagenic Activities Program is not a curriculum specially designed for low-income or slow children. It is, we hope, a good curriculum for all children. Thus, middle-income children, when in a Follow Through classroom, receive all the instructional benefits of Follow Through. Educationally, it should not be possible to tell by looking at a classroom which children are from low-income families.

However, the comprehensive aspects of Follow Through (medical, dental, nutritional, psychological, social services, etc.) are only available to the low-income children. If the community wishes to provide services such as those just described to all children, it can be done when and if the community finds the resources to do it.

How Is Follow Through Financed?

The amount of money the community receives for Follow Through is based on the number of low-income children in the program. Generally, $750 is provided for each low-income child in the program. Follow Through does not spend money on low-income children which could be spent on other children within the school system.

The school system must continue to spend money on the Follow Through classrooms just as it had been doing and would do if Follow Through were not there. This local Maintenance of Effort includes such things as teacher salaries (with the number of teachers being based on system-wide pupil-teacher ratio in lower elementary grades), transportation cost, maintenance of buildings, administrative cost, and materials per child cost. In other words, "Project services (provided from Federal and non-Federal sources) must supplement and not supplant services previously provided" (p. 27, Guidelines).

Follow Through money can only be spent on the Follow Through classrooms and other services provided to the designated low-income children. It is important that Follow Through money not be used to provide services which are already being provided and that Follow Through money not be used to provide services, other than instructional services, to middle-income children. There are problems regarding for what and for whom EOA money can be spent, but these problems can be clarified and solved with consistent effort.

"The success of Follow Through depends, to a large extent, upon the support of the general community. Many local and state agencies, organizations, and associations provide services to low-income families ... their expertise is valuable and their professional advice and services can be most useful in creating or expanding necessary services" (p. 9, Guidelines).

"Title I, ESEA funds must be used in conjunction with Follow Through funds granted under the EOA. At least 15% of such combined Federal funds must come from Title I, ESEA except that no Local Educational Authority will be required to devote more than 10% of its total Title I allocation to Follow Through" (p. 27, Guidelines).

Part of the cost of the Follow Through project must be provided by the local community. This is called the non-Federal share or In-Kind contribution. The percentage of this amount varies according to number of grades, number of years in the project, and income index of the communities (in a few communities). The non-Federal share must consist of the kinds of services or materials that would be acceptable for direct Federal funding. The contribution of in-kind monies or services must play a direct role in the Follow Through project. (See pages 27-29, Guidelines, for further explanation of various forms of Financial Support.)

What Is A Sponsor?

Follow Through is an experimental or research and development program. The United States Office of Education is trying to find the best way to insure the educational progress of low-income children. To do this, they have asked several individuals or groups to operate Follow Through projects, utilizing their particular approach to the problem. In a sense, these Sponsors are competing with one another to demonstrate the value of their approach. The University of Georgia Mathemagenic Activities Program is one of twenty such sponsors. We believe the Mathemagenic Activities approach to early childhood education is a good one--we are asking you to help us prove it.

Who Decides Who Will Be The Sponsor For A Particular Follow Through Project?

Each Follow Through community had the opportunity to examine the educational models of several sponsors. Some freedom was given to the community to pick the model which it felt best suited its needs. Communities do not usually change sponsors, but change is possible if the community and the sponsor have serious differences.

What Does The Sponsor Do?

That's a good question and it should be asked again and again by the people in the local project. The local project pays the sponsor (University of Georgia receives about $85.00 per low-income child this year) to help it develop its Follow Through program. What the sponsor does, or at least what your sponsor tries to do, is somewhat different in every community depending upon that community's needs. Also, what we attempt to do with each community changes as the project progresses and changes with experience.

Believing in the total Follow Through idea, the Mathemagenic Activities Program attempts to teach the idea of Follow Through to each community. We think of Follow Through as involving Instructional (classroom) and non-Instructional (e.g., health, social services) aspects. This division is often artificial as there is a great deal of overlap between these aspects. However, we begin with emphasis on the instructional program and then work toward complete implementation of all components.

The basic attitude with which we approach a community is: How can we help this community to develop the best possible educational program and to develop it in such a way as not to require the continued high level of financial support offered by Follow Through funds. Thus, our ultimate goal is to eventually leave a community and to have that community continue a Follow Through type operation without our help. How long that will take varies greatly from community to community.

What Is The Obligation Of The Community To The Sponsor?

The community follows the sponsor's approach to the best of its ability. It cooperates in the evaluation process which contributes to the continuous research of the sponsor.

The school district shall:

a. fully implement the Follow Through Mathemagenic Activities Program (as submitted to USOE) including curriculum materials and processes in each of the Follow Through classrooms.

b. utilize two aides, with at least one paid aide, per classroom of approximately twenty-five children.

c. coordinate in-service teacher and administrate training with instructional supervision with representatives of the MAP.

d. provide for continuous in-service education and evaluation processes. The community will need to provide in its general budget sufficient funds for the above items and for in-service training cost, consultant fees, educational material, and conference expenses.

e. provide staff and resources for all components of Follow Through and work with the sponsor to fully develop a total Follow Through program.

Who Makes The Decisions About Follow Through?

One of the most important aspects of Follow Through is the educational decision-making process that it encourages. A concerted effort is made to involve as many people in decision-making as is feasible. An attempt is also made to reach consensus on an approach to particular problems. Making decisions this way tends to take more time than unilateral (authoritarian) decisions, but the time is well spent.

It is important to understand how Follow Through is set up in terms of decision-making:

At one level we have the Federal Government, usually represented by a Project Officer (e.g., Mr. Husser/Miss Higgins), a sponsor (e.g., the University of Georgia), and the local community. These "partners" are ultimately responsible for making many of the decisions affecting a given project. Notice that there are three parties involved. For any given problem, the sponsor and the community may oppose what the Federal Government wants, or the Federal Government and the community can oppose the sponsor, or the Federal Government and the sponsor can disagree with the community.

A fourth party, the General (PTTA) Consultant, also is involved in many decisions. The PTTA consultant is a "disinterested" member; he (or she) has no axe to grind and is primarily attempting to facilitate communication between the Government, Sponsor, and Community. The PTTA consultant does not interfere with implementation of the sponsor's model by interjecting his own philosophy, but serves as an objective observer. EVERYONE INVOLVED IN THE PROGRAM SHOULD READ THE FOLLOW THROUGH GUIDELINES (they are entitled FOLLOW THROUGH PROGRAM GUIDELINES, February 24, 1969) for the general rules by which the project is governed.

At the local level, many decisions are to be made which do not necessitate the direct participation of the Federal Project Officer or the director of the sponsoring organization. However, a similarly arranged decision-making process (with checks and balances) should be set up for these decisions. Decisions at the local level should include the Follow Through Director (and the relevant staff), a representative of the school system administration or school board (if necessary), the sponsor representative (the liaison worker), and the Policy Advisory Committee. The PAC is discussed elsewhere in this manual. It is important that decision-making should involve several different "interest groups," and decisions should be reached through open discussion. The role of teachers in the decision-making process has not been specifically spelled out in the Follow Through Guidelines. What do you think is the significance of this omission?

Since most of the decisions made in a project directly or indirectly affect teachers, teachers should want to have a role in decision-making. They can play a role by making their views known to the director and other Follow Through staff, the liaison worker, the PAC, etc.

PAC - Questions and Answers

1. What is the PAC?

The PAC is the Policy Advisory Committee, a group composed of parents and other citizens who play a substantial role in the planning and management of the Follow Through project. The group acts in an advisory capacity to the local Follow Through director on all aspects of the local project.

2. Why was the PAC created?

The PAC was created to reopen the lines of communication between the educational system and the community being served by the system.

3. Who can be a member of the PAC?

The composition of the PAC must be as follows:

50%	-and-	50%
Low-income Follow Through parents		Members of community agencies Local leaders Individuals dedicated to helping young children Higher income Follow Through parents CAA Representative (compulsory)

4. Are there any nonvoting members?

Yes, staff members can serve as nonvoting members or as consultants with the approval of the voting PAC members.

5. What about the parents of Follow Through children who are not members of the PAC?

These parents can serve on committees headed by PAC members and attend general mettings. The "grievance" committee is available to all parents for discussion of problems relevant to the Follow Through program.

6. How are the PAC members chosen?

The 50% low-income parents are elected by the Follow Through parents in their child's class or school. The process by which the other members are chosen should be specified by local PAC bylaws.

7. Can anyone attend the PAC meetings?

While some meetings are restricted to voting members, most are open to all interested persons.

8. Who decides when to call a meeting and whether it is open or closed?

The chairman.

9. Who elects the chairman and secretary?

The chairman and secretary are elected by the entire membership of the Policy Advisory Committee.

10. What are their duties?

The chairman schedules meetings, helps set up the agenda for the meetings, and forms committees. The secretary records the minutes of the PAC meetings and forwards a copy to the sponsor, project director, and others at the descretion of the PAC.

11. What does the PAC do?

The PAC ...

Represents the interests and concerns of the parents, professional organizations, and public agencies of the community.

Actively participates in the development of, and gives approval to, the Follow Through application before it is submitted.

Establishes criteria for the selection of Follow Through staff personnel (paid and volunteer) and participates in their recruitment and selection.

Writes bylaws.

Continually assesses the effectiveness of the Follow Through project and makes recommendations to the project coordinator regarding program improvement.

Establishes a procedure by which grievances and complaints of parents and others can receive prompt and sympathetic consideration, and participates in working toward their resolution.

Assists in organizing parent activities.

Communicates with parents, community agencies and organizations, and others to encourage their active participation in the Follow Through project.

Assists in mobilizing community resources.

YOUR MODEL--
MATHEMAGENIC ACTIVITIES PROGRAM
THE UNIVERSITY OF GEORGIA

Mathemagenic activities Program--quite a mouthful! But do not let the words overwhelm you. Mathemagenic (pronounced mə-thē'-mə-jen'-ik) activities are, literally, those activities which "give birth to learning of a 'scientific' type", i.e., an organized interpretation of the physical and social environments. The emphasis should be on the term activities; we believe that learning takes place best when the child is actively involved in the learning process. The "scientific" aspect of our definition of learning refers to science in the broadest sense--that which involves acquisition of systematic knowledge. Note that we are referring to the systematic nature of that which is learned and *not* just to the learning of those things which are taught in the science curriculum. The emphasis of the Mathemagenic Activities Program is to make available to the child those materials and activities which will allow him to develop a systematic understanding of his experiences with both the physical and social environments. Some people may say that our approach is too "structured" or does not allow the child "freedom." Every learning environment (e.g., classroom) has a structure; but learning environments do differ in terms of how *systematic* they are--that is, whether there is some plan or reason behind what is available and what is done or not done with the child. The issue is an important one and will be discussed later is this manual. Perhaps you would want it discussed in a workshop, also.

The Mathemagenic Activities Program (MAP) is an early childhood (K-3) education program that grew out of the work of many curriculum development specialists at the University of Georgia Research and Development Center in Early Cognitive Stimulation. The specialists in the various substantive areas developed curriculum guidelines and instructional units that would match the child's developing intellectual capacities. Thus, the skills and concepts to be learned are sequentially structured, permitting individual children (or small groups) to progress at a pace that insures learning but maintains the child's motivation and curiosity level.

Concept learning, including concept of "self," is of primary importance in our program in early childhood education. But Mathemagenic activity implies a context for concept learning that does not do violence to the child's social, emotional, and personal development.

The theoretical base for the Mathemagenic Activities Program (MAP) is consistent with, although not directly based upon, the theories of the Swiss psychologist, Jean Piaget. Piaget, who was born in Switzerland in 1896, has devoted many years to studying the mental growth of the child. He has observed the actions and reactions of both his children and other children from infancy to adolescence. A scientific analysis of his observations has led him to important conclusions about the mental growth of the child.

This manual will not go into a detailed discussion of Piaget's theory, but rather will present the main ideas and principles derived from the theory that can be put to practical use. The Mathemegenic Activities Program has incorporated many of these principles some of which you, as teachers, will recognize.

The Child's Thought Progresses Through Several Stages Before It Reaches Mature Adult Thought: The child's thinking develops gradually and increases in complexity as he progresses from one stage to the next. Every child must pass through every stage. While we cannot accelerate, very much, the development of the basic thought processes, we can do something to the environment to insure that thought develops at an optimal rate. Development is always the interaction of the biologically developing child and the environment. We try to arrange the learning environment, which includes teacher strategy, grouping, physical materials, etc., so as to encourage these activities that lead to optimal development. Every child is ready for some type of experience--every child is ready to profit from some type of stimulation from the environment. The MAP materials are designed in small and sequentially arranged steps to increase the chances of providing the type of experience which every child will find profitable. Each child, no matter what he is ready for, should be able to find the "environmental input" (material and activity) which suits him. Situations which create an imbalance between what the child knows and what there is to learn provide continual "challenges" to learn. The MAP approach assumes that a basic property of the human being is that the child will progress intellectually when what is presented to him matches what he is ready to learn. Breaking the subject matter areas into small sequential steps can allow this to happen continually for every child. (We know it is not as easy as that, but the potential is there.) Therefore, the MAP materials are designed in small steps, with each step containing a wealth of material to stimulate the child to advance to the next stage. Frequently, a pretest or assessment activity determines the present stage of the child. Later, a posttest or reassessment activity determines how far the child has progressed and whether he is ready to advance to the next stage. We have faith in the ability of the children to learn if given adequate exposure and opportunity and allowance for variation in time, frequency, and optimal learning activities.

The Child Learns By Interacting With His Physical And Social Environment:

(a) The child must have the opportunity to physically manipulate objects. One of the secrets to successful teaching is to allow the child to understand the concept at the physical level before he progresses to the abstract level and to return to the manipulative to reinforce the abstract. For example, manipulating the cuisenaire rods brings "alive" the concept of number.

(b) The child must have time to socially interact with his classmates and adults. Social interaction allows the child to see how his thoughts and ideas compare with those of other people. Since social interaction also involves talking, it fosters the development of language. Language (putting ideas into words) is also important for the development of thinking. The child also learns how to get along with other people and how other people react to him as a person. Thus, social interaction is not only beneficial for the development of knowledge, it is also beneficial for the development of "personality."

One of the most basic and permanent concept learnings during the early years is the concept of "self." Feelings of competence, of ability to cope with the environment, of satisfaction with one's self and relations with others are not directly "taught," nor do these feelings and attitudes just grow naturally if we don't "interfere." Rather, adequate self-concepts emerge from early successes in coping with problem-solving situations that "engage" the child; that is, the child is highly self-motivated and experiences satisfaction from successful achievement. A learning environment that provides many opportunities for mathemagenic activities will, at the same time, provide the basis for development of positive social-emotional development as well as intellectual growth in areas considered essential to all.

Varieties of Experiences Are Essential To A Sound Program:

Each of us is "turned on" by different things. So too, each child may be "turned on" to learning by different experiences. The greater the number of activities, the greater the chance of reaching every child. Varieties of learning experiences maximize the probability of each child finding activities which inspire him to learn. Many of the children in Follow Through suffer from a lack of exposure to learning experiences. These children are fully capable of learning when they are given the opportunity to "do their own thing."

The MAP classroom is organized so that it is brimming with innumerable opportunities for the child to engage in a variety of exciting learning activities. Thus, as one enters an MAP classroom he might see one child working with cuisenaire rods, another with the cubicle counting blocks, another with groups of objects, and yet another with the number line, all with the same learning goal in mind.

The Child Must Have A Certain Degree Of Freedom To Discover Information For Himself: How many times have you explained the same concept on several different occasions only to meet with the frustration of the child still not knowing the correct answer?

The moral of the story is, "Telling is not teaching." Someone can talk until he is blue in the face, but until the child convinces himself that the information is true, he will not retain it.

Thought arises out of action. The child's action upon materials enables him to discover certain concepts. It is not sufficient to provide the child opportunities to play indiscriminately with objects; the play must be directed toward the discovery of principles. By pouring liquids into containers of various sizes, the concept of volume becomes clarified and acceptable to the child's mind.

One might ask at this point, "But what if the child needs prodding and does not realize his discovery?". Here is where the teacher plays a critical role. She can pose guiding questions which will lead the child to discover important information. "What did you do to it?" and "Why do you think that happened?" are among the verbal proddings that a teacher can use.

Children will discover important information by themselves at different rates and with different ease. One technique that a teacher can use is to demonstrate with one child before a group of children. By asking one child questions and asking for predictions about what would happen under different circumstances, the other children may be led vicariously through the learning situation and be encouraged to make discoveries by themselves in the future. The modeling of the manipulation of objects is one way of encouraging children to engage in this type of activity on their own.

CHAPTER II

INSTRUCTIONAL COMPONENT

INTRODUCTION TO THE LEARNING ENVIRONMENT

The University of Georgia Follow Through approach, Mathemagenic Activities Program, began mainly as a classroom instructional model. We offer a curriculum composed of eight subject areas. Perhaps more important than the particular "subjects" we urge you to teach is the type of learning environment which we strongly suggest that you adopt. Therefore, this section on the instructional component will deal with many areas not directly related to any particular subject area. All of this information, however, does relate to the Mathemagenic Activities Program. The Mathemagenic Activities Program is an approach to the total educational process. The topics discussed in this section all relate to that process.

ROOM ARRANGEMENT

"Do ya wanna see my work?" is the question one five-year-old always asks visitors to the classroom as he guides them around the building blocks, over a game of bingo, and behind the reading group to "his corner." Why is "his corner" important to him? This is where he displays all his work. He doesn't want to take his papers home. He did at first, but his grandmother never really took the time to look at them. She would only grunt as she glanced at the paper before tossing it into the trash.

When his teacher noticed that Bobby never took his pictures home anymore (he always threw them in the trash can as he left the room), she asked him about this. "Why not?" said Bobby, "That's where they'll end up anyway."

Bobby's teacher, who was very perceptive, realized how frustrating and discouraging it must be to Bobby to see his works of art end up on the trash pile. This could be very upsetting to Bobby when he heard William talking about the bulletin board in his mother's kitchen where she always displayed the work he brought home from kindergarten. This teacher solved Bobby's problem by giving the students the choice of taking their work home, or displaying it in their "corner" of the room. It may not always be up straight, sometimes the tape is a mess, but this doesn't bother Bobby and his teacher at all.

What can we learn from this story? If we are wise, it will make us realize that room arrangement is . . .

A Joint Effort

Without children and their need to become educated, we would need neither schools nor teachers. Therefore, the school program should be planned with the child's needs in mind. Equally as important as the content, materials, and methods is the type of physical environment in which the learning takes place. The really effective classroom evolves as a joint effort among the teacher, aides, and students. It should not just look good (everything in its place with lovely teacher-made bulletin boards for the superintendent or parents to admire when they drop by); it should be regarded by everyone as their room because it took their planning and their work to make it into an appropriate learning environment.

Before misinterpreting this previous statement, let us clarify it by discussing (other than the child's wishes) some of the . . .

Factors Affecting Room Arrangement

The size of your room and the number of students certainly influence what can be done in room arrangement. (In the elementary school, the suggested space per child is 35 square feet.) The size of the room is dependent upon the age-level of the child and the type of instructional program. An activity-oriented curriculum requires more space than a very rigid, structured curriculum with little student freedom. A curriculum based upon a minimum of three groups, with one teacher and two aides and sometimes a parent volunteer, also requires a different arrangement than the traditional, self-contained room with mostly total group instruction.

The home environments and cultural characteristics of the students should also be considered. What might be a visually stimulating environment to a middle-class child might be too similar to the cluttered, confusing home and neighborhood environment of the ghetto child. The ghetto child might enjoy a neater, more aesthetically pleasing school environment. To help you determine this, involve your students in decorating and arranging the room. Any room should be arranged with, and for, the specific group of students who will be spending most of their daylight hours in it.

Regardless of what the adults or students would like to do with the room, they will be limited by the type and amount of furniture and storage and display space that is available.

Ideally, in the Follow Through classrooms there should be attractive, flexible furniture, e.g., trapezoidal, oblong, kidney shaped, and/or round tables which can be arranged for small group instruction. The trapezoidal tables are particularly effective because they can be used as individual work tables or pushed together to form a larger table to accommodate a larger number of students. Each student should also have some place in the room for keeping his personal belongings. The tables which have individual storage compartments underneath are very good for this.

With several small group and independent activities going simultaneously in the Follow Through classroom and with the emphasis on student activity and involvement, the classroom should be completely carpeted. This not only decreases the noise-level, but also makes the classroom more flexible. With carpeting, many of the activities can be done on the floor if table space is not available. Often the floor provides a more relaxed and natural setting for children. If the whole classroom cannot be carpeted, there should be at least one area rug where the total group can assemble for story-time or singing.

Multi-purpose room dividers are often a tremendous asset to small group instruction. At first, many teachers find that they are needed to minimize distractions with three groups going simultaneously. After a while, the teachers usually find that they are not essential since the students become so involved in their work they are not aware of what the other students are doing. Their main value is that they are multi-purpose. The room dividers should have casters and be easily movable; they should have shelves for displaying books and instructional materials, and the back should be a chalk, flannel, peg, or bulletin board.

Each classroom should have ample storage space. As the school year progresses and your Follow Through supplies start to flood your room, you will realize the need for a storage system (perhaps by subject area). Remember it is not our intention that all Follow Through equipment be exposed to the children at the same time; the materials should be rotated frequently.

Each classroom should also have enough space and facilities for setting up learning territories. In addition to the permanent chalkboard and bulletin boards, there should be at least two portable (standard-type) chalk and bulletin boards.

This is the ideal, but if your classroom doesn't have all this, here's what you can do to . . .

Make The Most Of What You Have (Or Don't Have)

During preplanning, critically survey what is available to you. Discuss with your aides the probable number of students you will have and the probable characteristics of the students. Realizing that their first introduction to, and impressions of, the classroom could be very critical in establishing their attitude toward school, outline your general objectives for the year and arrange your room accordingly. For example, if one of your objectives is to develop responsibility in your students, some provision in your room arrangement should be made for areas to facilitate independent activities.

After stating your objectives and possible ways of achieving them, do room arrangement diagrams on paper. Do them on paper first because it is much easier to erase than to actually move the furniture. After you and your aides have an arrangement on paper that you feel will meet the needs, of the first day at least, arrange the basic pieces of furniture.

Some general principles (from observations made in many Follow Through classrooms attempting to carry out the MAP philosophy) regarding room arrangement are:

The room should be structured so that the small group instruction and activities involving more concentration and listening skills are at one end of the room away from the areas with the greatest amount of traffic and the noisier activities.

Each work area should have enough tables and chairs and a chalkboard and bulletin board. These areas should be separated by some type of divider.

Many possibilities exist for arranging the internal group structure, such as grouping in a circle or a semi-circle. Remember, the children need not sit on chairs every time they work in groups. Some activities are more effective if they take place on the floor, the rug, the hall, or even outside.

At the opposite side of the classroom should be the learning territories that would involve the most activity and noise.

In arranging the learning territories, keep in mind the type of activity that will take place in each. For example, the reading corner should not be next to the music center.

Somewhere in the room should be left open a space large enough for the whole class to assemble on the carpet for total group activities, such as dramatic presentations, puppet shows, stories, and class planning.

At all times your Follow Through room should facilitate a safe flow of traffic between equipment, rest rooms, and exits. As previously discussed, if space is available, learning territories for each area in the curriculum should be set up with current materials that the students can explore and use as independent activities to reinforce and expand their instructional periods.

Reading Corner	Art Corner	Science Corner	Math Corner	Social Studies Corner	P. E. Corner	Music Corner

Once the basic furniture and materials are arranged, you are ready to decorate. At this point, save yourself and your aides a lot of work. Wait until the students arrive and involve them in decorating the room. Of course, you will want to do something to make the room attractive and inviting. A bulletin board including all the student's names as a welcome to school is often very effective.

Allow the children to decorate the bulletin boards by themselves. This responsibility relays the message to the child that the teacher trusts him and encourages his creativity. Pupil-prepared bulletin boards must be rotated frequently to enable every child to participate in decorating his classroom.

These are some of the things you should do if you find yourself in the "ideal" Follow Through classroom. Chances are that you will be assigned to something less than ideal. Then your major task and test-of-your-creativity becomes . . .

Making The Most Of What You Don't Have!

If you don't have space enough for learning territories, at least have one table, or territory, on which manipulative materials of current relevance to the curriculum are displayed.

If you don't have tables but do have flat-surfaced individual desks, push them together to form tables for your small group instruction.

If you have a shortage of tables and chairs, don't hesitate to sit on the carpet with your students for those activities not requiring a writing surface.

But you're saying, "What if I don't have either a carpet, or an area rug?" Go to a local carpet dealer or manufacturer, explain your problem, and ask for any samples or remnants he has. Involve your parents in taping or stitching these pieces together.

If you don't have room dividers, but need them, go to an appliance dealer and ask for a refrigerator box. If the box is left as it is, it can be used to display students' work; it can be used as storage space, a playhouse for the girls, or a Kiva for the boys during their Hopi unit. It can provide a quiet place for the child who feels like getting away from it all for awhile, or, as one ingeneous teacher-aide team did, it can be cut and stood up like a divider. (They used one side as a bulletin board and covered the other side with flannel, to be used as a large flannelboard.)

If you have old, rough, marred tables, do what one Follow Through school did: Involve the parents in a project to sand and refinish the tables.

If you don't have enough storage space in your classroom, ask your principal about the possibility of central storage space somewhere in the school. If all Follow Through teachers stored and shared their materials in a central location, there would be more space for student activity in the classroom. Each teacher would also have more materials available for an activity if the materials were shared.

During the first week of school, each day you, your aide, and students discussed the room and made suggestions for improving the arrangement. You decided upon a system of assigning various housekeeping chores to the students to keep the room neat and to help the students develop responsibility in this area. At the end of the first week you've done everything your teacher handbook told you to do about room arrangement. Now, what do you do . . .

After Your Room Is Arranged Perfectly!

First, correct the misconception that you have your room arranged perfectly. No room is ever perfect. The room arrangement will be constantly changing throughout the year as the needs and activities in the classroom change. How can you guard against having a static, unchanging classroom? Develop a checklist or some other type of evaluation with your students in which you look critically at your classroom once a week.

PLANNING AND SCHEDULING

"How will I ever teach eight subjects?" is a common question asked by the new Follow Through teacher. The secret to being able to teach the whole curriculum is by planning, integrating, and scheduling. Scheduling and planning are discussed in this section. Some suggestions for integration of curriculum "areas" through adopting a Mathemagenic Activities approach are presented on page 98.

The Why of Scheduling

With eight curriculum "areas" to implement and one teacher and two aides responsible for the instructional program, it is necessary to make time allotments and schedule the subjects into the daily and weekly schedule to avoid confusion. A broad schedule provides the basis for developing daily and weekly lesson plans.

The How of Scheduling

As the teacher-aide team begins to plan their schedule, they first should consider the whole week in view with their over-all objectives. Below are some of the questions teachers should ask themselves when developing a schedule:

1. Approximately how many minutes each week should each subject be taught? Currently, MAP generally recommends time allotments as follows:

Language Arts	1 1/2-2 hours daily
Math	45 minutes-1 hour daily divide into two periods

Science	30 minutes 2-3 times/week
Social Studies	30 minutes 2-3 times/week
Physical Education	15-30 minutes daily
Health	20-30 minutes 2-3 times/week
Art	30 minutes 1-3 times/week
Music	30 minutes 2-3 times/week
Independent Activities	30 minutes daily
Planning for teacher-aide team	30-45 minutes daily and 1 hour weekly

2. What special considerations need to be made because of the necessity of sharing materials and facilities with other classes?

3. What periods are set by the principal? (e.g., physical education, lunch, recess, etc.)

4. How can we schedule independent and supplementary activities?

5. How can we schedule the areas so that the teacher and aides are teaching what they feel most competent in?

6. How can we involve the students in helping to plan and to make decisions regarding the schedule?

Once these things have been considered, the team is ready to make up a schedule. In organizing the schedule, they should be guided by the following suggestions:

1. Schedule the subjects requiring the greatest amount of concentration (e.g., language arts and math) in the morning.

2. Schedule at least fifteen minutes at the beginning of the day for opening group activities and time for planning in which the students help plan some of their day's activities.

3. Try to alternate subjects requiring much concentration, writing, and sitting with activities where the students are more active and move around.

4. Schedule a fifteen minute outside recess period in addition to the regular twenty minute physical education period. This provides an opportunity for the students to interact freely with one another and to choose their activities.

5. Schedule a short rest or enrichment period (e.g., storytelling) after lunch.

6. Schedule at least one activity each day in which the whole class is brought together as a group.

7. Schedule at least thirty minutes every day for independent activities. Unless the students are given the opportunity to develop the responsibility for choosing and carrying out some of their own activities, they will become too dependent.

8. Schedule time for weekly and daily lesson planning for the teacher-aide team, preferably after the students have gone home.

9. Utilize the last fifteen minutes of the day for clean-up, preparing to go home, and an evaluation of the day's work, with a look at what the children need to work on the next day.

Scheduling--Not Enough!

After the team has their schedule, the next step is to do a weekly lesson plan. This should be a joint effort between the teacher and aides and usually takes at least one hour per week. Just as the students' needs, abilities, and interests are constantly changing, the weekly plan should reflect these changes. This necessitates a new and careful look at the weekly plan each week, and revisions should be made accordingly. Weekly planning should always precede daily planning.

The Why of Weekly Planning

Weekly planning gives the teacher-aide team an overview of what is ahead. Long-range goals can be set at this time. Broad lesson plans (not necessarily detailed) should be made a week in advance so that teachers and aides can begin to make materials or find books in the library or order films. Perhaps a field trip must be arranged, or a resource person from the community needs to be invited for social studies, or perhaps food needs to be purchased for a social studies lesson. Daily planning does not give sufficient notice for all these preparation tasks. Also, there may be a lesson coming up which teachers and aides do not understand. By knowing several days in advance, they can ask the resource teacher to explain or demonstrate a difficult lesson. Weekly planning is also helpful in that it provides extra work for faster children. If the class is able to learn Wednesday's lessons more easily than anticipated, then the teacher can proceed with Thursday's lessons.

The How of Weekly Planning

The weekly lesson plans should be done on a standard form (Appendix C). This form should include space for the day of the week, time, subject area, and teacher and aide assignments. The weekly plans should be filled in from the broader schedule and need not be excessively detailed.

The Why of Daily Planning

"I just don't understand what's wrong with those kids. Can't they find something to do?" Hopefully, these words will not be uttered in a Follow Through room. One way for the teacher to avoid such a situation is to have interesting, complete lesson plans everyday.

Since there are two instructional aides and one teacher in the typical MAP room, daily lesson planning is even more essential. The team should spend a minimum of thirty minutes each day planning the following day's lessons as they review the current day's work.

Teachers and aides may wonder why daily planning is necessary if weekly plans have already been made. In some cases, children may progress exactly as expected and no revisions will be needed. However this is rare! Children are not predictable machines; they may be absent or have bad days, or, happily, they surprise us by doing everything planned in half the time we expected. Daily plans are necessary then to revise the weekly plan according to the daily evaluation of progress--the "feedback" from the children.

There is another important reason for daily communication about lessons between the teachers and aides. The certified teacher who has had professional training must supervise her aides and transmit the needed information to them.

Although good aides do work as hard as the teacher, they must do this work under the teacher's direction. Even if an aide is more skilled than a teacher in a certain area (for instance, some aides have had music training while the teacher has not), the teacher must nevertheless know what the aide is doing in her music lessons and be ready to defend the lessons as educationally sound. Never should a teacher say, "Miss A. does all the art, so I don't know what lessons they are on." In some states it is illegal for teacher aides to "teach," and the only way Follow Through can justify teaching aides is to provide strict supervision by certified teachers.

Even without legal ramification then, teachers and aides must communicate what they are doing to each other, must make daily and weekly lesson plans together, and must operate as a team rather than as three separate teachers.

The How of Daily Planning

The team should set aside at least thirty minutes daily when they are relatively free of interruptions. Since they owe their attention to the students as they arrive in the morning, this would probably not be the best time for planning. If possible, planning should be scheduled after the students have gone home.

The daily plans should be written on a standard form (Appendix C) that includes more than just the lesson number and page in the manual. They should include the time segment and a brief statement of what both aides and the teacher will be doing and with which group they will be working. Supplementary and independent activities should also be scheduled and described. As a guiding principle on the length, always write down enough information on the lesson plan outline so that anyone who came into the classroom would have enough information to teach the lesson.

Keep the lesson plans from week to week on file to refer back to, if needed.

The aides should be actively involved in both daily and weekly lesson planning. The teacher should not just write the plans at home and show them to the aides.

In the daily planning session, the team should go over the previous day's lessons one by one and briefly review the progress of each group. At this point the teacher should help her aides decide whether they should do the next lesson in the manual, review the same lesson, or develop some alternate activity for teaching the same skill or concept. Teachers and aides should always plan more activities than they think the children will be able to accomplish so that constructive activities will always be available to those children who finish one task and need something else to do.

The team should first really believe that daily lesson planning is important and that it is not just a requirement of the MAP or resource teacher.

After Writing the Daily Plans

The next step is collecting and/or preparing the materials needed for each lesson. The entire day will go much more smoothly if everything is assembled at the beginning of the day.

Cutting out materials, such as word cards, should be done in advance. If children must sit and wait while their teacher or aide spends five minutes rounding up books or other supplies which should have been ready, they are being cheated of valuable instruction time. Not only will children not learn as much, but they will also probably get bored and misbehave. Who could blame them? The efficient teacher and aide team will not only know what each person is to be doing every minute--they will also have all materials prepared and ready to go before the children arrive in the morning.

You're probably saying, "That's impossible, unless I do all the preparation or unless my aides work overtime." Not necessarily. With wise scheduling, each team member can have at least one thirty to forty-five minute period during the day when she is not directly responsible for any group, e.g., during independent activity period.

Remember, although the schedule is worked out in minutes, teacher judgement is important. Teachers should not snatch a half-completed painting away from a child and say, "Art time is over, you have to do science now." If children are happily involved in an art project, then it would be better to let them continue to do art during science time, being careful to make up the science lesson at a later time. We believe that a schedule is good to depart from--as long as the departure is educationally sound. There is one danger, however, the danger of continuously departing from a subject the teacher does not like. All teachers have favorite subjects and subjects they dislike. However, the teacher who continuously "departs from" math will find her children in trouble at the end of the year. Therefore, a schedule is helpful to let teachers know the approximate amount of time they should be teaching each subject. New and inexperienced teachers should probably adhere more rigidly to their schedules until they become efficient in classroom management.

CLASSROOM MANAGEMENT

The MAP classroom should provide an environment which is conducive to the development of independence, responsibility, and emotional and social growth, as well as physical and mental skills. One way we seek to accomplish this is by changing the row by row structure of the traditional classroom to a situation which revolves around small group instruction and independent activities.

Since the MAP classroom has one teacher and two aides, it is possible to have several small groups and individual activities going on while, at the same time, the teacher is able to be aware of each student's progress through direct contact with each student and by daily conferences with the aides.

Structure Versus Chaos

Upon entering a MAP classroom, one might at first wonder why the children appear to be "running wild" with no structure. The observer should soon realize that the classroom that looks the least structured in terms of having many activities going on simultaneously with each child having freedom and independence is probably the classroom which reflects the most structure in terms of careful planning, scheduling, and arranging material and physical equipment. The teacher who always has all the children doing the same thing at the same time has much less preparation work than the teacher who tries to have a child-centered classroom. The child-centered teacher must devote many hours to adequate planning and careful daily assessment of each child's progress. The best MAP teacher is one who knows what each child can do in each subject; she also knows her aides' strengths and weaknesses and, with all this in mind, she will direct some twenty to twenty-five children in learning experiences each day--doing this in such a way that the casual observer may think that she is not working very hard.

A challenge? Yes, but a very worthwhile, fruitful, and rewarding challenge at that!

Freedom and Control

The classroom teacher has the responsibility for setting the social-emotional, as well as the physical, climate of her classroom. If she is a warm, friendly, understanding human being who believes in democratic social living where the children are given the freedom to explore their environment, the classroom should be a friendly, happy place for everyone to work.

"But if my classroom is open and the children are allowed freedom, I will lose control and the children will 'run wild'!" is often the initial response of the teacher to the freedom which is encouraged in the MAP classroom. When we say that we want more freedom in a classroom, we mean we want fewer arbitrary rules, less group suppression, more tolerance for free movement, free activity, and free talk. However, when in the exercising of freedom a child interferes with the freedom of another child or adult by interfering with the other's activity, freedom has been misused. The child must be taught to use freedom and must learn the limits.

The teacher must always keep a balance between freedom and control. Together with the aides and children, she must establish a familiar routine and classroom rules. The positive approach of what to do rather than what not to do works miracles. Children who are happy, content, and eagerly involved in their work are much less likely to cause discipline problems.

How can a teacher or aide eliminate inappropriate behavior in the classroom? One of the most effective control devices is to isolate the offending child from other children for a short period of time. When you see a child beginning to get out of control, warn the child early that his behavior is inappropriate. If the child continues to misbehave, isolate him for a short period of time from the other children. Try to isolate the child in an impersonal way. The child should understand that it is his particular behavior and not he as a total person that is being questioned. You should explain to the child why he is being isolated. After the child has calmed down for a few minutes, ask him if he is ready to control himself, follow the rules, and rejoin the group. After the child has rejoined the group, watch him for a few minutes to see that he is all right.

Do not threaten children excessively; we do not want to control by fear, but rather want to build in self control. It is often good to give a child one warning. For example: "If you continue to be so noisy, you will not be allowed to continue with this group." A warning, especially when you stop the child by putting your hand on his shoulder, is often enough to redirect his behavior. A warning is in effect a short isolation.

However, do not warn a child more than once or twice because this attention may be strengthening the unwanted behavior. Generally, warn the child once and then impersonally isolate him if the behavior continues.

One must always consider the possibility that the unmanageable behavior or bad behavior means something more than that the child is simply out of control. For example, that a child is acting up may mean that the task he is being asked to do is too difficult, that he doesn't understand it, or that the task is too dull and boring to keep his attention. If something like that is responsible for the inappropriate behavior, then the teacher should make the appropriate modifications in the material or task provided for the child.

Also, we must keep in mind that, just like adults, children sometimes just have bad days. If this is the case, try to protect the child from getting into trouble. Keep an eye on him and watch for the early signs of disturbance, or keep him with you more than usual.

Thus, when we suggest that the schoolroom become freer and that children be given more freedom, we mean freedom within the context of limits, responsibility, and self control. We realize that this is initially somewhat difficult to achieve and that considerable teaching of how to use freedom will be required. However, we do believe that in the long run the extra effort required will make teaching more rewarding for you and the children.

GROUPING

Why Group and What Size Groups?

By dividing the children into a minimum of three groups, we come closer to meeting the needs of each child. We have found that these are the limits for the optimum functioning of groups. When a teacher or aide works with a maximum of eight children at a time, she can perceive the individual needs, interests, and problems and gear her instruction accordingly.

When To Use Groups

Most of the day should be spent in small group instruction in order to enable every child to actively participate in every lesson. Discussions, musical activities, physical education, painting, mathematics, social studies, and language arts are best taught in small groups. Field trips, film viewing, group singing, daily planning, and storytelling are some activities in which the class can participate as a group.

How To Select Groups

Throughout life students will come into contact with people with varied backgrounds and abilities; thus, it would be helpful to begin early to associate with and work with all types. Several possible ways of grouping children exist. All should be utilized at some time to provide the children with the desired variety of contacts.

When students are grouped only by ability, they very well know which are the "smart" and "stupid" groups regardless of the camouflaging names which the teacher gives to each group (such as bluebirds, robins, etc.).

By varying the means of grouping, no stigma is attached to the children who would otherwise be constantly placed in the "stupid" group.

In placing children in groups, the teacher-aide team should use all available information they have from the student's cumulative record and any formal or informal assessment techniques they have at their disposal. After the student is placed in a group, the grouping should always be flexible enough to change as the student's abilities change.

Some possible ways of grouping are:

Ability grouping - the children are placed in a group according to their achievements in a particular subject area. Generally, the students should be ability-grouped in Language Arts and Math.

Compatibility grouping - the children are placed in a group according to their compatibility with the other children in the group. This eliminates children with personality clashes being placed together and children who "set each other off" being placed together. Compatibility grouping is good for Social Studies, Science, and discussions.

Random grouping - the children are randomly placed in groups. Physical Education, Music, Art, Science, and sometimes Math can be taught in these groups.

Free choice grouping - the children choose their own groups. Free choice can be used in Physical Education, Art, Science, Music, and projects.

SIGNS OF A HEALTHY MAP CLASSROOM

When an outsider (visitor, liaison, resource teacher, etc.) visits a classroom, what determines whether he judges the classroom to be "good" or "bad"? The following is a list of some of the observable signs of a healthy classroom. You might want to stand back and look at your classroom in these terms at least once a week.

1. There is a hum or buzzing on entering the classroom; noise level is moderate. This indicates to the observer that the children are doing things, are active. You can't be active without noise.
2. The visitor is hardly noticed; children are either unaware or unconcerned with his presence. Again, this indicates that the activities children are engaged in are more interesting than the novelty of a person walking into the room.
3. Child's work is displayed in several parts of the room. The work is "new" and up to date.
4. Children are moving about the classroom, and no adult is upset by it.
5. Lesson plan is available and activities correspond to lesson plan.
6. Classroom is living and not institutional. For example, there are things in the classroom that children like--animals, plants, toys. Children feel free to bring some "noneducational" things from home.

7. Teacher and aides are guiding and channeling the activity of the children--"helping" the children rather than having the children do things at the direction of the teacher and aides.

8. Activity centers or learning centers are useable and used; they are not displays which are "not to be touched" or which a child would not be interested in touching. The dust level on these centers indicates use or disuse.

9. Children do not interrupt or interfere with other children's activities.

10. Room is arranged for child comfort regarding temperature, lighting and seating arrangements.

11. Children are not waiting idly for the next activity to begin.

12. A warm feeling of acceptance for all people prevails. Teacher respects all children and aides.

ROLE DEFINITION OF THE MAP TEACHER

What Are The Characteristics The MAP Teacher Holds In Common With Any Good Teacher?

Like any other good teacher, the MAP teacher should be genuinely dedicated to and concerned about providing the best possible instruction for all children. She should accept each student as an individual and attempt to develop him to his greatest potential. She should be eager to accept both changes and challenges in the instructional program which she provides for her students while remembering the total structure of the curriculum for which she is responsible.

The MAP Teacher Teaches A New Innovative Curriculum:

The MAP Teacher is responsible for the implementation of all eight curriculum areas of the Mathemagenic Activities Program. She is assisted in the implementation of the MAP curriculum by the resource teacher, the liaison, two aides, and parent volunteers.

The MAP Teacher Has The Responsibility Of Faithfully Implementing The Total Mathemagenic Activities Program:

Every MAP teacher is responsible for teaching the total Mathemagenic Activities Program, and should devote at least the minimum suggested time allotment to each of the eight curriculum areas. She thus serves as an invaluable source of feedback on curriculum implementation to the MAP staff.

Knowledge of the MAP curriculum is essential if a teacher is to be successful. Some lessons require quite a bit of study; most lessons require more elaborate preparation than is normally expected of a traditional teacher. By having a sound knowledge of the material to be taught and by having all books, cards, and other supplies ready ahead of time, teachers and aides will be able to faithfully follow the MAP curriculum.

The MAP Teacher Uses New Materials And Equipment:

The MAP curriculum calls for a variety of exciting curriculum materials and equipment in every curriculum area.

The MAP Teacher Teaches Together With Two Aides:

The MAP teacher delegates teaching responsibility to her aides after spending a minimum of thirty minutes daily planning together with them. These daily evaluations and discussions with her aides are vital since the teacher must constantly be aware of the progress of every student in her class.

The teacher should serve as a guide to her aides, providing them with alternate methods if the procedures in the curriculum manuals are not successful with some students and helping them to determine when they should move more rapidly or slowly or when review is needed. The teacher should teach every student every subject every week.

The MAP Teacher Works With Several Resource People In Addition To The School Principal:

Since the Follow Through Program provides instructional, medical, dental, nutritional, social, and psychological services, the MAP teacher is asked to cooperate with a great many people. While working with so many people is often time consuming, the benefits of the children receiving a better education, with consideration for the whole child, are highly evident.

The MAP Teacher Devotes Most Of The Day To Small Group Instruction:

Because she teaches in a team together with two aides, it is possible for the MAP teacher to teach small groups of children. The teacher and the two aides each teach a group, rotating so that all three are exposed to every group.

The MAP Teacher Is A Guide To Learning:

The MAP Teacher must believe in the child's ability to learn. She should guide him by asking probing questions and offering him positive reinforcement, but she should not try to cram information into him. With her proper guidance, at the appropriate stage of development, the child will learn when he is ready to learn and the resulting knowledge will be his true possession.

The MAP Teacher Must Devote Extra Hours To The Program:

Being a good MAP teacher means more work than being a good traditional teacher. Some of the additional hours required of the teacher include:

(1) More time for lesson preparation because of the newness of the curriculum

(2) Daily and weekly planning time for the teacher-aide team

(3) Attending Follow Through staff meetings

(4) Attending pre- and in-service training sessions

(5) Home visitation

The MAP Teacher Encourages Home-School Cooperation:

The goal of each Follow Through teacher should be to visit the home of every student in her class at least once and to have each parent visit the classroom at least once. Also, the teacher can provide feedback and suggestions to the local staff on ways of bridging the gap between home and school, particularly in the parent involvement component.

Visits to the children's homes enable the teacher to better understand the child and often prove to be extremely enlightening.

The MAP Teacher Is A Public Relations Agent For The Follow Through Program:

Every organization has the need for good public relations with the community which it serves. Government programs, especially those dealing with the disadvantaged, are often misunderstood and mistrusted by the people in the community. The MAP teacher should always be alert for opportunities to develop good relations between the program and the community. The MAP teacher is in a position to explain and promote Follow Through to any of the community people, as well as to the parents of her students and to the other teachers in the school system who are not a part of the program. In addition to being a representative of Follow Through in this way, the teacher can aid in creating good public relations by contributing to the local Follow Through newsletter and by contributing ideas for local newspaper articles and local radio or TV programs.

What Should The Teacher Do As She Prepares To Work With Two Aides?

The teacher should accept her aides as an asset to the instructional classroom volunteers who do a variety of things from filing the students' papers to tutoring individual students. In their parent workshops, the parents make many instructional materials for the classroom. The parents thus provide the teacher with many extra hours that in the normal classroom situation would be used for these tedious, time-consuming chores.

Through workshops, in-services, and close contact with the MAP staff and consultants, the teacher is engaged in continuous career development.

For the Follow Through students, the teacher is probably the most important influence on the total development of their lives. What an exciting, worthwhile, and fulfilling challenge you have before you!

THE ROLE OF THE MAP TEACHER
AS COMPARED TO
THE ROLE OF THE TRADITIONAL CLASSROOM TEACHER

Traditional Teacher	MAP Teacher
Teaches a familiar, traditional curriculum	Teaches a new, innovative curriculum
Is autonomous in her classroom	Is responsible for implementing the total Mathemagenic Activities Program
Uses familiar, traditional materials and equipment	Uses new materials and equipment
Teaches by herself with help from curriculum specialists (e.g., music)	Teaches together with two aides
Works with school principal and/or elementary supervisors	Works with school principal, resource teacher, Follow Through Director, liaison, consultants, and Follow Through noninstructional staff

Traditional Teacher	MAP Teacher
Teaches the entire class at once, except for primary reading groups	Teaches in small groups
Teaches mainly by lecturing or "telling"	Teaches by involving children actively in learning, stimulating and guiding them to knowledge, and encouraging them to think and experiment
Spends varying amounts of time before and after class	Devotes extra hours to the program
Is not usually required to maintain home-school contacts	Encourages home-school cooperation

ROLE DEFINITION OF A MAP AIDE

So Now You're A Follow Through Aide . . .

Perhaps you always wanted to be a teacher and work with students, but for some reason the opportunity to become a teacher never materialized. The Follow Through Program provides you with a unique opportunity to work side-by-side with a teacher as her aide and to find out if teaching is for you. When you conduct a learning activity with a group of students, you need not feel apprehensive since you know that you are working under the supervision of a teacher and you can go to her if any problems arise.

If you find that you enjoy teaching, you can become involved in a career development program which will prepare you for teacher certification. Your on-the-job practical experience as a classroom aide will prove to be an invaluable asset when you enter a teacher training program.

What Personality Qualities Are Important For A Follow Through Aide:

1. She should like children and enjoy working with them.
2. She should be willing to grow mentally and to improve personally.
3. She should be able to work well with other adults; and she should be willing to accept direction and constructive criticism from the classroom teacher.
4. She should recognize the importance of her job in shaping children's lives, and she should be committed to fulfilling her responsibilities even if extra work is required.

What Can The Follow Through Aide Expect To Do?

The presence of two teaching aides in each classroom is one of the unique features of the Mathemagenic Activities Program. These aides are important and invaluable members of the classroom team. They work closely with the teacher to provide the best possible educational environment for their students.

An aide in the Mathemagenic Activities Program must assume some teaching responsibility as well as clerical and technological duties. She is directly supervised and assisted by the teacher. The Follow Through aide is also under the supervision of the building principal as well as the teacher in matters regarding local policies and regulations.

The aide plans and evaluates daily with the teacher. She also participates in pre- and in-service training together with the teacher and should be involved in planning the relevant aspects of the program that pertain to her position.

The Follow Through aide is usually in an ideal position to serve as a Follow Through public relations agent in her community, in general, and in her own neighborhood, in particular.

Some of the specific duties that you as an aide might assume, depending upon your particular situation, are:

Instructional Duties:

1. Assume teaching responsibility under the direction and supervision of the teacher.
2. Plan with the teacher a minimum of thirty minutes daily and one hour weekly.

3. Daily, discuss with the teacher the performance of each group.

4. Prepare the instructional materials you and teacher will need for your lessons.

5. Tutor individual students who need additional help.

6. When the teacher introduces the lesson, circulate among the students to help them when needed.

7. Become familiar with and use techniques of behavior modification to reinforce positive behavior.

8. Assist the students in planning and organizing murals, bulletin boards, displays, and dramatizations.

9. Accompany the students to the library and assist them in selecting and checking out books.

10. Put written work on chalkboard and charts.

11. Listen to students read orally.

12. Assist during independent activity period.

13. Assist the teacher with achievement testing and scoring.

Clerical Duties:

1. Prepare and runoff stencils.

2. Prepare the attendance report.

3. Collect lunch money.

4. File student's work, stencils, and instructional materials (e.g., picture file).

5. Prepare transparencies for the overhead projector.

6. Maintain inventory of materials and equipment.

Technological Duties:

1. Use the overhead projector, filmstrip projector, carousel projector, tape recorder, record player, 16 mm. projector, dry mount press, mimeograph machine, and video recorder.
2. Make stencils, transparencies, and mount and laminate pictures using the dry mount press.

General Duties:

1. Help supervise students on the playground.
2. Help supervise students in the lunchroom and restrooms.
3. Help supervise students on field trips.
4. Supervise students with housekeeping chores.
5. As the students arrive at school, do a cursory health check.
6. Serve as a Follow Through educating influence in the local community.
7. Attend Follow Through parent meetings and P.T.A.
8. Attend all pre- and in-service workshops and Follow Through staff meetings.
9. Become familiar with, and adhere to, all school policies.
10. Become familiar with the teacher's views on classroom management and adhere to them as closely as possible.
11. Adhere to the professional code of ethics expected of aides.

How Can The Aide Prepare For Her New Role?

The aide should immediately become familiar with all school policies and rules. She should also become familiar with the teacher's basic philosophy on such matters as discipline (by asking her, if the teacher does not volunteer this information).

She should expect to assist the teacher in instructional activities as well as noninstructional activities that consume valuable teaching time. The aide should become familiar with the curriculum materials and manuals of the Mathemagenic Activity Program.

She should always be thoroughly prepared for any lesson she is to conduct with the students.

She should plan to adhere to the same professional ethics that apply to the teacher and to regard herself as functioning on a team with the teacher.

She should plan to improve her ability as an aide by taking advantage of the career development opportunities within the Follow Through Program.

She should always try to have materials made for lessons one week in advance.

POSSIBLE ACTIVITIES OF THE AIDE DURING THE COURSE OF THE DAY

Before Children Enter Class:

Bus duty or playground duty.

Assist with breakfast program.

Review daily lesson plan with teacher and other aide.
(Do not hesitate to ask questions.)

Placing materials for the day's lessons in a readily accessible place.

When Children Enter Class:

Greet children warmly.

Take attendance, lunch count.

Conduct a cursory health check.

During The School Day:

Teach and assist teacher.

Assist with lunch and restroom duty.

After Children Leave School:

Discuss day's activities with teacher and other aide.

Plan for next day.

Clean up room.

Display children's work.

Correct papers.

Prepare stencils.

Collect and prepare materials for the next week's lessons.

ROLE DEFINITION OF THE RESOURCE TEACHER

The resource teacher helps the teachers and aides do a better job of implementing the Mathemagenic Activities Program by providing in-service training, assisting with staff meetings, and classroom observation with follow-up conferences. She helps plan the curriculum and consultants' visits, coordinates materials within the schools, does demonstration teaching, works with individuals or small groups of students within the classroom, and assists teachers in the interpretation of test scores. Below are listed some of the things which the resource teacher does along with an explanation of why she does them.

What the Resource Teacher Does	Why
Observes in the classroom in general	to learn your good ideas so that she can share them with other teachers just as she shares other teachers' ideas with you and to find out what she can do for you and what ideas she can share with you.
Observes the children	to identify and seek help for the children with social, emotional, or nutritional problems.
Observes the aides, parents, and volunteers	to find out their needs and plan training accordingly.
Familiarizes herself with each group in the class	to help herself prepare materials and in-service training that will help you to provide continued progress and growth in each group.

Teaches groups of children upon request	to help you if you have a question about teaching a lesson or to show you how to experiment.
Attempts to find out your questions, problems, and weaknesses	to help you find alternative methods, approaches, and activities and to decide which consultants to schedule and to know what you need and want from the consultants and to plan preservice and in-service training to meet the needs of the teachers and to communicate this information to the University of Georgia liaison to see if she can rectify the situation.
Attends conferences	to share your good ideas and to obtain ideas from others to share with you.

The Resource Teacher's major goal is to help teachers create a positive, productive learning environment. While she is not a panacea for all problems relating to Follow Through, she should be willing to cooperate to help you explore solutions to problems that may bother you. Remember, the Resource Teacher may not know all the answers and angles to our curriculum but she is willing to find the answers. Here are some suggestions as to how you can use your Resource Teacher:

> Ask her for suggestions when you want to know what else you can do to help Johnny learn.

When you find that you do not have adequate time to plan as a team, ask the resource teacher to help your three-man team to find adequate planning time together.

Ask her to help you "break in" parent volunteers into the classroom situation.

Ask her to find materials that will be successful and stimulating for all ability groups in each curriculum area.

Ask her to show you how to set up independent activities and learning territories.

Ask her to show you how to guide children to work independently.

Ask her to help your aides develop skill in handling groups.

Ask her to help you coordinate your field trips.

Ask her to help you interpret test instructions, possibilities and results.

Ask her to locate community resource people, facilities, or places that would enhance your unit of study.

Ask her to arrange a consultant visit to clarify certain procedures.

Use her as a sounding board for your ideas.

CURRICULUM CONTENT DESCRIPTIONS

An Australian who received a new boomerang as a gift was extremely excited until he attempted to throw away his old boomerang. So, too, some teachers find it difficult to discard many of their old teaching techniques when they are first presented with the instructional component of the Mathemagenic Activities Program (MAP). Being a MAP teacher is not easy; the teacher must know not only how and what to teach, but also the why of what she is expected to teach. Hopefully, the transition will be easier for the teacher if she really understands the why of the MAP.

Additionally, we really don't expect you to change your teaching completely. As a teacher you have probably found many techniques which work for you. Many of these can be retained or used with the new materials which will be available to you. We do ask that you try new things and discuss with the resource teachers and liaison the "old" teaching behaviors which you wish to retain. More often than not these "old" teaching behaviors are, or can easily be made, consistent with the teaching/learning approach which we are asking you to adopt.

The Mathemagenic Activities Program's curriculum for grades K-3 includes Art, Health, Language Arts, Math, Music, Physical Education, Science, and Social Studies. Except for Language Arts and Mathematics, no special texts are required. Teacher's manuals are provided for each area with detailed teaching units with instructions for sequencing material in commercially produced texts. The units are:

1. Designed for small group instruction.
2. Stated in terms of objectives with suggestions on how to accomplish the objectives.
3. Activity oriented.
4. Sequentially organized, building from simple to complex.
5. Designed to generally provide a means of assessing whether the objectives were met.

ART

The MAP Art program attempts to develop a teaching strategy based on cognitive and sensory exploration. It consists of art activities suggested in the sequential curriculum as well as art appreciation activities.

Philosophy and Objectives:

An Introductory Sequential Art Curriculum was written to provide both the teacher and students with the security they need to enjoy art.

The first objective is developing sensory awareness which enables one to enjoy the world around him by becoming more aware of, and sensitive to, the patterns, texture, and color of things around him. As the student becomes more aware of and has more experience with externals, he also grows in creative thinking, which is the second objective. The MAP Art program attempts to instill the idea that each person's unique way of expression is important.

The third objective is developing skills in handling art media. This is begun through an understanding of the nature and potential of each material. These three objectives should happen concurrently.

The student is also introduced to basic art terms and concepts. Concrete objects and stimuli are used to teach the child to critically perceive and to analyze his surroundings. This program does not expect the student to imagine experiences and to reproduce them visually. Instead, the student begins with the concrete object as a stimulus and then uses his imagination as he reproduces the object.

Also included in the MAP Art program is Teaching Art Appreciation With Related Art Activities. This program represents an attempt to vitalize the world of art for children. Visual experiences can serve as a means of communication between different cultures and different times. The objectives are to expose the student to a wide variety of styles of expression, to develop his ability to look at works of art, talk about them, and share his opinions, and to stimulate art experiences related to some aspect of the print.

Guidelines In Implementing The MAP Art Activities Program:

1. Generally, the Art Activity lessons are designed to be taught two-three times per week.
2. A student should never be hurried through a lesson. If a child finishes in two or three minutes, encourage him to pursue. If time runs out before a child finishes, allow him to continue working on his picture during an independent activity period or in subsequent art periods.
3. Art within the classroom should not be limited to structured art lessons or to a time slot. If possible, an easel should be set up at all times so that the students will have the opportunity to paint whatever they choose during independent activity periods. At the very least, a variety of art materials, including paints, crayons, paper, and clay should be available in the art center.
4. Whenever appropriate, art should be integrated with other subject areas.
5. Art instruction should be with a small group of students; this allows the teacher to assist the children individually and reduces

the time required to set up and clean up.

6. Using the "question-asking" method, a teacher guides the child in developing his work.

7. The students' art work should be displayed in the classroom. Each student should be allowed to choose which pieces he wants to display. As the student compares his work with the other students' work, he is doing self-evaluation.

8. After the third unit in An Introductory Sequential Art Curriculum, the teacher can change the sequence according to her specific needs.

9. The Art appreciation unit should be implemented only after the students have completed the first six units of An Introductory Sequential Art Curriculum.

10. After teaching all lessons in the Introductory Sequential Art Curriculum using the media recommended, the lessons can be retaught using other media.

Guidelines For Implementing The Art Appreciation Units:

1. The objective of the Art appreciation unit is not to have students memorize the artists' names and to associate them with certain pictures; names and titles of prints are emphasized only when they have significance to the lesson.

2. After being used in an art appreciation lesson, the print should be displayed for several days to enable the students to talk about the picture and to look at the details more closely.

3. At the end of most of the lessons is an activity for extending an idea suggested by the print. The students should not be

encouraged to copy the print; therefore, the print should not be visible once the students begin working.

4. As an evaluation, the teacher should complete the checklist at the end of each unit of lessons. She should never criticize or place a grade on art work.

The third grade art program contains a unit of instruction on photography and light design, with emphasis on the latter. Basic photographic concepts and principles are demonstrated via a simple pinhole camera which the students build from a shoe or envelop box. Light design is primarily taught by the photogram technique: translucent, transparent, and opaque objects of a "found" nature are arranged aesthetically on a sheet of graphic arts paper which can be handled in ordinary roomlight; the paper and design are then exposed to an intense white light. Developing brings up--as if by magic--a striking black, white, and gray photographic image. Under close supervision, the children experience the thrill of working with chemicals which develop, neutralize, and fix their photographs and photograms.

Within the confines of "the traditional art program," these photographic experiences supplement and enrich the more traditional media (drawing, painting, printmaking) through which the child repeatedly experiences and hopefully fulfills the need to order his visual impressions according to logical and "pleasing" alternatives, otherwise known as the basic elements of design. Additionally, the child is introduced--no matter how tenuously--to the imperative concept that there is some real difference between a snapshot and a photographic image which springs from aesthetic considerations.

Pinhole photography and light design are the baby steps by which a much neglected and often abused art medium can enter the elementary art curriculum as a fullfledged team member. Logical extensions of this basic unit in the primary and secondary grades include thematic still photography (print and slide studies of nature, people, animals, cultures, architecture, life styles, cities, etc.) and abstract and representational 8mm and 16mm films and video tapes which are written, acted, directed, and produced by students. When properly structured, these advanced experiences transcend categorization as art, language arts, social studies, or what-have-you, and enter the exciting realm of visual literacy, a new inter-disciplinary approach to teaching/learning of paramount cocern to all educators.

The art program is limited only by the imagination and creativity of the teacher, aides, and students. A "junk box" filled with a variety of materials often provides a source for a most unusual work of art when the student has a chance to experiment with the ideas and techniques gleaned from the more formal art instruction.

HEALTH

Philosophy and Objectives:

This program, entitled Health Concepts for Young Children, utilizes a variety of books, films, filmstrips, pictures, charts, and clippings to introduce the student to the study of health.

The student becomes familiar with the meaning of good health and habits of personal cleanliness. He learns the how and why of maintaining good health habits and then puts them into practice. Opportunities for the students to practice good health habits should be included continuously throughout the school day. Hopefully, there will also be a carry-over effect into the home. (Many of the concepts and lessons in Health Concepts for Young Children could become the basis for health and nutrition education in the parent workshops.) Food and nutrition, emotional health, family living, sex education, community health workers, and maintaining good health are also included in the health program.

Guidelines for Using Health Concepts for Young Children:

1. The lessons outlined in the manual should be scheduled for approximately thirty minutes twice a week. In addition, breakfast, lunch, hand washing time, and the time when someone skins his knee are among the occasions for "on-the-spot" practical instruction.

2. Since many of the lessons are centered around a book or picture and involve discussion, the students will become more actively

involved and more interested if the lessons are conducted in small groups. An exception to this would be the viewing of a film or filmstrip. However, the follow-up discussion should be conducted in a small group.

3. If the specific book, film, or filmstrip is not available, the teacher should make appropriate substitutions.

4. With the exception of the initial year with the MAP, Health Concepts for Young Children should be used in the first and third grades. Kindergarten and second grade teachers are to develop their own health activities.

5. The pretest is used to introduce the lesson and to serve as an observation technique to enable teachers to measure the child's growth in health habits and knowledge.

6. After administering the posttest, the teacher should jot down any pertinent responses or evaluative comments regarding individual students or total group performance for future planning.

LANGUAGE ARTS

"You ain't learnin' if you ain't readin', and you ain't readin' if you don't understand what you're readin'."

Philosophy:

The general philosophy of the MAP Written Language program is to provide the student with the sounding, word learning, reading, and writing skills needed to develop facility with both oral and written language by using a variety of game-like approaches which are designed to make learning fun. We do not say "fun" for the sake of fun, but say fun because that is the most effective learning technique.

Guidelines for Teaching the Language Arts

1. The instructional goals are broken down into very small steps; this enables every child to keep moving, even if it is by very slow, gradual steps.

2. Instead of continually explaining, the teacher's role is to set the stage for the child's action that leads to learning.

3. If the manual does not contain enough lessons for teaching the skill, or if the procedure in the manual does not seem appropriate for some students, the teacher should develop additional lessons for teaching the skill.

4. The Written Language program is broken up into four steps: sound learning, word learning, reading, and writing. The sound learning units are designed to give the student an understanding of oral language which will enable him to sound out unfamiliar words. This includes

teaching the names and sounds of the letters and teaching word families by using a linguistic approach to phonics. Letter formation is also combined with sound learning. The word learning units teach the student to recognize the printed words which he will later need in the reading units. As an additional reinforcement to the word learning and for the development of writing skills, the students write and spell the words they have been reading.

Each child is required to be able to spell every word he can read so that he will be less likely to forget the word when he encounters it in a book. Confusing words, such as "was" and "saw" are presented in the same lesson so that the child will learn to discriminate between words that will give him trouble later.

Reading is attempted only after the child has the phonetic skills which will enable him to attack the words presented in the reading. Dramatization and discussion of stories should be encouraged.

Writing is not confined to the writing of letters or words. Early in the program, children are encouraged to write sentences and stories. Punctuation and grammar are taught as the child needs them in his lesson.

5. Since there is repetition and reinforcement in the word learning, reading, and writing units, it is not necessary that every child master every word before progressing to the next lesson. As a practical "rule-of-thumb," when ninety percent of the students have mastered the target learnings, the teacher should proceed to the next lesson. (She can provide additional help to those few who have not mastered the target learning.)

6. In order for the students to derive maximum benefit from the instruction, the lessons should be taught in sequence. This does not mean that every student should be taught every lesson in every manual. With the assistance of the resource teacher and/or liaison, the teacher should be able to determine when it would be appropriate to combine or skip some lessons.

Teaching Techniques:

Throughout the program, games are utilized to make the lessons enjoyable and appealing so that the students will be more eager to learn.

In the beginning stages, as they are learning the letters of the alphabet, the students do both visual and tactile matching activities. Many worksheets are provided. A unit on literature stresses reading for enjoyment through the use of flannelboard aids, favorite stories, nursery rhymes, and dramatizations.

Experience stories and crossword puzzles are used throughout the program. Reading becomes more meaningful as the children use the words they have learned to create stories of their own. By the end of third grade, they write their own newspaper.

Since the child has mastered the vocabulary prior to reading a book, the reading should prove to be a pleasant, enjoyable experience. Follow Through children have been known to read forty to fifty pages of a book in one sitting. The children should choose their books, find a comfortable spot, and read aloud (or occasionally silently if they have adequate word attack skills) while the teacher or aides circulate among the groups listening to each child for awhile. The teacher may list the words missed on a note pad and later help the child to relearn those words. If the child asks to be told a word, the teacher must tell him, but she should not interrupt a child's enjoyment of a story in order to force him to sound it out phonetically.

The typical MAP student reads three or four times as many readers as his contemporary in the traditional classroom in grades 1-3, despite the fact that the MAP Language Arts program gets off to a slower start than the traditional Language Arts programs. The MAP Language Arts program is based on the philosophy that it is more beneficial for the child to read as many books as possible at the lower level than to be pushed into the "hard-back books" or "first readers" before adequate skills and self-confidence have been achieved. In the first grade, the child reads nine or ten preprimers instead of the usual three and he reads three or four hardback primers instead of one. Then, in the second grade he should be able to capitalize on this foundation and read all first and second grade texts (three or four of each) and thus surpass his contemporaries in the traditional classroom.

Materials:

Four basal reading series are included in the Written Language program: American Book Company, Allyn and Bacon Company, Scott Foresman, and Merrill Linguistic Readers.

It is recommended that during its first year in Follow Through, a new community have at least the Merrill Linguistic Readers and Allyn and Bacon series in addition to the series they had been using previously. One additional series should be added each year.

The Outline of Behavioral Objectives includes word lists for Ginn, Harper and Row, and Houghton-Mifflin. Specific lesson plans are not included for teaching the words in these readers; the teacher is to use the lessons in the word learning units as a guide for developing her own activities for teaching the words.

Some of Harper and Row Linguistics, Follett, Benefic, and Science Research Associates (SRA) supplementary readers are also written into the program.

Unit mastery tests are provided for all units except Level A.

Evaluation:

After each unit, a Unit Mastery Test (UMT) is administered to the students. The results of these scores provide a continuous record of each student's progress and help the teacher determine when the students are ready to proceed to the next unit.

Before moving to the next unit, at least seventy-five percent of the students should score at least ninety percent on the test. (See Appendix C for Picture of Percentages Wheel which will help you check the percentages.)

SKILL COMPARISON CHART FOR MATHEMAGENIC ACTIVITIES PROGRAM LANGUAGE ART PROGRAM

(A more detailed description can be found in An Outline of Behavioral Goals.)

MAP

Books Read	Skills Taught	Grade Level
Level A None	1. Letter names and sounds 2. Concepts of names 3. Listening skills 4. Sequencing 5. Writing letters 6. Literature appreciation	1. Kindergarten 2. Grade 1 for children who did not have kindergarten or did not master it 3. Extremely slow children above grade 1
Level B Allyn & Bacon: At Home American Book Co.: On Our Way Follett: None Harper & Row: None Merrill: 1 Scott Foresman: Sally, Dick & Jane SRA: None	1. Word learning 2. Word families 3. Spelling 4. Writing of simple sentences and paragraphs	1. Fast groups in kindergarten 2. Grade 1 3. Slow groups above grade 1

MAP con't

Books Read		Skills Taught	Grade Level
Level C	Allyn & Bacon: Here and Near Here and Away Our School American Book Co.: Time to Play All In a Day Pepper Follett: Big Bug, Little Bug My Own Little House Harper & Row: Reg. Series - (In some centers-all Harper & Row books are through Grade 1 at this point) Linguistic - Tuggy Frog Fun Merrill: 2, 3 Scott Foresman: Fun With Our Family Fun Wherever We Are The New Guess Who SRA: A Pig Can Jig A Hen In a Fox's Den Benefic Press: On Days We Like	1. Word learning 2. Sentence and story writing 3. Punctuation 4. Alphabetizing 5. Note writing 6. Making contractions	1. Grade 1 2. Grade 2 3. Slow children above grade 2

MAP con't

Books Read	Skills Taught	Grade Level
Level D Allyn & Bacon: Our Town American Book Co.: Up the Street and Down Around Green Hills Follett: Roly Poly Cooky The Elf in the Singing Tree The Sad Mr. Sam Sack Nobody Listens to Andrew The Splendid Belt of Mr. Big The Curious Cow Harper & Row (some centers): All Through the Year Linguistic: It Happens on a Ranch Merrill: 4, 5 Scott Foresman: Fun With Our Friends SRA: None Optional: Dr. Seuss books, My Weekly Reader	1. Cursive writing 2. Outline 3. Report writing 4. Paragraphs 5. Sequencing	1. Grade 1 - Fast groups 2. Grade 2 3. Grade 3

MAP con't

Books Read	Skills Taught	Grade Level
Level E Allyn & Bacon: Fields and Fences Town and Country American Book Co.: Down Singing River Over a City Bridge Follett: The Boy Who Would Not Say His Name One Day Everything Went Wrong Harper & Row (in some centers): Elephants to Eskimos Faraway Places Bicycles to Boomerangs Merrill: 6 Scott Foresman: Friends, Old and New More Friends, Old and New SRA: None Reader's Digest	1. Use of Telephone Book 2. Calendars 3. Letter writing 4. Suffixes, Prefixes 5. Syllabication	1. Grade 2 - Faster children 2. Grade 3

MAP con't

Books Read		Skills Taught	Grade Level
Level F	Allyn & Bacon: Story Caravan Magic Windows American Book Co.: Beyond Treasure Valley Follett: None Harper & Row: None Merrill: None Scott Foresman: Roads to Follow Along Friendly Roads SRA: None Dictionaries Book Reviews Children's Newspapers and Magazines	1. Book reports 2. Writing news articles 3. Biography 4. Homonyms 5. Advanced word study	1. Grade 2 - Only very fast children 2. Grade 3

Traditional Language Arts Program

Books Read	Skills Taught	Grade Level
3 preprimers 1 hard primer 1 "big" 1st grade reader	1 speller 1 grammar	1
1 second grade reader plus 1 supplementary reader	1 speller 1 grammar	2
1 third grade reader plus 1 supplementary reader	1 speller 1 grammar	3

MATH

Philosophy:

The Mathematics program consists of a series of concept units, enrichment units, and supplementary units with the regular basal math text as the core of the math program. All units are designed to develop abstract mathematical concepts. Pleasant game-like activities attempt to develop the concepts on a physical, concrete level, making math a relaxed, enjoyable experience for the children.

The enrichment units go beyond the scope of the regular basal program and are not tightly integrated with the regular program. The supplementary units supplement the regular basal program by providing additional activities, particularly on the concrete level. These are integrated into the teacher's guide.

Concept Units:

Matching - An understanding of one-to-one correspondence and equivalent sets enables the student to operate effectively in quantitative situations prior to the time when he learns cardinal number concepts. The child begins to acquire number concepts by concentrating on the number of elements in a set and the matching relationship of that set with other sets.

Counting - The counting unit attempts to develop the ability to count as well as to develop an understanding of rational numbers. It leads the child into a better understanding of the relationship between counting and operation of union of sets.

Patterns - The patterns unit attempts to develop one-to-one correspondence, visual perception, and spatial orientation. The student looks at a pattern in his book (The Duck Book) and reproduces it on his table with tiles, blocks, or squares. Through various activities, the child develops a larger concept of numbers and is required to do some inductive reasoning.

Operations - This unit strives to give meaning to the familiar operations of addition and subtraction by using various activities involving concrete objects and visual aids.

Relations - The student, by making comparisons between various sets, learns to distinguish the set having "more than," "less than," or same (equivalent) number of objects as a given set. Indirectly, the student is also introduced to the concept of ordinal number.

Enrichment Units:

Geometry - The student is introduced to the basic concepts of volume by handling many different types and shapes of three-dimensional objects by volume, by having experiences which show conservation of volume, and by learning about the need for standard units of volume.

The student is introduced to linear measurement to help develop the concept that measurement is the comparison of an object with a given unit of measure.

Shadow Geometry - The student learns to predict the shapes which are the projections of other shapes and to visualize projections which he has not seen before (not simply to recall the exact examples presented in the manual).

Topology - The student is introduced to elementary ideas in topology; that is, he is led to explore topological equivalence of solids, sheets, lines and "nets," open and closed figures, and the ordering of things on a string after bending and stretching. He learns to bend and stretch bodies without tearing, cutting, or joining and observes the features (invariant properties) which do not change.

Teaching Techniques For Enrichment Units:

Many of the activities in the enrichment units are presented as games which will hold the students' interest. Manipulating concrete objects before progressing to the more abstract concepts is emphasized.

Additional work sheets and individual student booklets are provided as an extension of the activities suggested in the manuals. In addition to being used as teaching tools, they can also be used as diagnostic tools to assess the child's understanding of the concept.

Specific lesson plans for all activities are not provided in all manuals. If more work is needed in a particular area, the teacher can use the lessons as a guide for developing additional lessons.

The math activities range from those appropriate for total group activities to those appropriate for individual seatwork. Some allow much activity on the part of the students; others are of the drill type.

The enrichment units are to be taught simultaneously with the work in the basal text and the supplementary units.

Supplementary Activities:

Materials - In addition to the curriculum manuals, other materials are used to reach specific concepts. Logic blocks are used to teach basic concepts of logic and classification skills. Cuisenaire rods and cubical counting blocks are used to teach the operations of addition and subtraction, multiplication and division. Multi-Base blocks are used to teach the concept of place value. Flash-Math provides the drill needed as the students learn basic number facts.

Independent Activities:

Materials - Among the materials recommended for independent activities in the math corner are the shape trace set, practical scales and weights, volume demonstration set, compass, balance, and liquid measuring set.

MUSIC

Philosophy And Objectives:

The MAP Music program is based on the assumption that random musical experiences, however enjoyable (and enjoyment is important), cannot develop musical understanding with the same celerity and thoroughness as structured musical experiences. The kindergarten, grade one and two programs use Music - A Structured Program for Very Young Children, Stages I, II, and III. These stages are based on the theory that learning is optimal only when the "best" content is presented in the "best" sequence at the "best" pace. The program begins with the aural (hearing) perception of music since it operates under the principle that children should have many opportunities to hear music. After aural perception comes performance. This can be singing, playing, or moving. The students soon acquire the vocabulary needed to verbalize about musical concepts.

Stages I and II deal with listening, appreciation, rhythm, and melody. Very little singing in included in Stages I & II, while Stage III contains more singing; singing has a purpose and is not just singing for enjoyment. Nevertheless, singing for enjoyment is important and should be included sometime during the school day.

The third grade program, A Music Program for Young Children, is based upon the belief that the student can develop understandings vital to his comprehension of music by composing simple pieces of music. The philosophy is that the teacher should begin early to encourage the manipulation of musical elements through inductive powers. The student moves from the first stages of aural awareness to the higher levels through the introduction of the elements of music in a meaningful context.

Guidelines For Implementing The MAP Music Program:

1. The lessons should be taught in sequence.

2. The music lessons are designed to last between twenty to thirty minutes and should be taught two to three times per week.

3. Some of the lessons are more appropriate for small groups; others for large groups. Those lessons involving singing are more appropriate for the total group.

4. Since Stages I and II do not contain any singing, the teacher should use the supplement to add more enjoyment to the music program.

5. The teacher should answer the evaluative comments at the end of each lesson and record relevant information that will help her with planning other lessons.

6. There is a record which can be purchased from the MAP office at the University of Georgia which contains the music needed to implement Stage II.

PHYSICAL EDUCATION

Philosophy And Objectives:

The primary objective of the MAP Physical Education program is to help the student develop skills he will need in everyday life as well as to develop a cognitive understanding of movement.

Movement exploration is a technique for teaching physical education to preschool and primary grade children. The objectives of this program are to develop skills of movement which will not only contribute to successful participation in games and sports but which are necessary in everyday life as well. The kindergarten program is based on Preprimary Physical Education Through Movement Exploration. The first and second grade programs are based on Primary Physical Education Through Movement Exploration. The Third grade program is based on Elementary Physical Education Through Movement Exploration.

The child's natural need for activity is channeled into the development of an ability to express himself through movement. A sequence of lessons and supplementary games and activities allows the student to identify particular types of movement, and to solve problems using movement. The teacher presents the problem to the students through a system of verbal cues, rather than through demonstration.

Guidelines For Using Primary Physical Education Through Movement Exploration:

1. Each lesson is designed for a fifteen to thirty minute period of instruction.

2. Physical Education should be taught three to five times a week; many of the activities, (e.g., on the balance beam) can be done inside when the weather is inclement.

3. The lesson should not be attempted until the teacher and/or aide understands the objective, has assembled the needed materials, and has read the lesson enough to be able to teach the lesson without reading from the manual. If the teacher relies too much on the manual, she will not be able to adequately observe the students' performance and thus be unable to give verbal cues which will assist the children in improving their performance.

4. The lessons should be taught in small groups. The larger the group, the more difficult it becomes to assess each student's performance. If the lesson has to be taught to the total group, the teacher and both aides should observe the students.

5. The groups could alternate doing the lesson, or three different activities could be going on simultaneously. For example, the teacher could have eight students on one area of the playground doing an activity such as throwing bean bags into hula hoops while one aide is doing an activity on the balance beam with eight students, and the second aide is doing an acitivity with the jump ropes.

6. Hopefully enough materials and equipment will be available so that waiting in line for a turn can be kept to a minimum. If each class does not have ample materials, this can be accomplished by having a central storage area for the materials or by the teachers "pooling" their equipment.

7. The activities in the appendix of the teacher's manual may be done simultaneously with the lessons in the manual.

8. The teacher should remember at all times that the emphasis is on verbal cueing and not on demonstrating the skill or participating with the students. Remember! Make it easy on yourself. If some of the students are not doing the activity correctly, focus attention on a student who is performing correctly, thereby using him as a model for the correct performance. However, in many cases there are many correct ways of doing things and one child should not be used as a model in these cases.

9. At the end of each lesson, the teacher and/or aides should take a few seconds to estimate the percentage of students that could successfully complete the task.

SCIENCE

Children of all ages, whether or not they attend school, encounter or interact with their physical world and try to interpret or make some sense of this interaction. As a result of this interaction, children begin to develop a "common sense" view of their environment. This "common sense" view is not entirely adequate since it can lead children to formulate superstitions, fears, or misconceptions about their physical world. It is imperative that the school have a science program which will enable children to acquire intellectual skills to help them interpret their environment with more than a "common sense" viewpoint. In addition, the intellectual skills which are practiced in the science program should enhance the development of the skills introduced to the children in the other subject programs.

The MAP Science program consists of a blending of the AAAS curriculum, Science-A Process Approach, with certain units of the Elementary Science Study (ESS) program. There is an introductory unit for the kindergarten developed by Dr. William Zeitler of the University of Georgia.

Philosophy and Objectives:

The AAAS science program is designed to develop the processes of observation, using space/time relationships, using numbers, measuring, classifying, communicating, predicting, and inferring. Although learning specific content is not the goal, hopefully, as the student actively participates in the activities, he will retain much of the content.

The Elementary Science Study units provide informal learning activities for individual children and/or small groups of children in which they practice skills introduced in the process approach units.

Dr. Zeitler's preprimary science unit used in kindergarten is a series of lessons which provides the children with practice in using their five senses as a means of gathering information about their environment.

Teaching Techniques:

The emphasis in our science program is on actively involving the students in experiments and tasks under the direction of the teacher. (This does not mean teacher demonstration but children's learning through individual discovery.) The Science-A Process Approach program provides individual lesson booklets each of which contains objectives, a list of materials, activities for teaching the objectives, an appraisal, and an individual evaluation by random sampling.

Since the program is built around a process approach which actively involves the students, the instruction should be in small groups so that all the students can have access to and involvement with the materials.

The tangrams, attribute games and problems, mirror cards, and Light and Shadow are some of the Elementary Science Study units which are sequenced into the AAAS at appropriate places. These help develop the student's classification skills, spatial orientation, perception, and concept of symmetry. Initially, these activities are under the supervision of an adult. Once the students know how to use them, they can be used as independent activities.

Evaluation:

Preprimary Science Curriculum -- A pretest is administered at the beginning and end of the unit. An evaluative checklist given after each lesson is completed.

Science-A Process Approach - Each lesson contains a general appraisal which provides the teacher with a means for discovering how the group as a whole understands the concepts. A competency measure at the end of each unit needs to be used to check to see if the unit has been adequately learned. Since administering these tasks can be very time consuming, only a random sample of students is evaluated for each unit. Each student's response is checked as being acceptable or unacceptable for each task and is recorded in the record book.

SOCIAL STUDIES

Curricula Description

The MAP Social Studies program is primarily based on the Minnesota Project Social Studies. This program introduces the child to the social and geographical environment through a study of diverse cultures throughout the world. By understanding the cultures, the children learn to generalize and develop thought processes which serve as tools for examining their world and its people.

The kindergarten units (The Earth As The Home Of Man, A World Of Many People, Our Global Earth, A Home Of Varied Resources, and Man Changes The Earth) contain a geographical emphasis to provide the children with a better understanding of their physical environment. Cooperation among people and common features of people throughout the world are also stressed.

In the first and second grades, the concept of family is emphasized. In the first grade, the units are: Hopi Family, Japanese Family, Quechua Indian Family, and Chippewa Indian Family. In the second grade, the units are: Colonial Family of Boston, Hausa (or Ashanti of Ghana), Soviet Union Family, and Kibbutz Family. The particular cultures studied have been selected because they represent examples of different types of family structures. The children are led to generalize that the definition of a family is functional, that a family embodies those who nurture children, and that the numbers and specific members of a family are not as relevant as the function that the family serves. In this way, a child who lives with grandparents or other relatives who nurture him need not feel less normal than the child who lives with his natural family since the function of the family is fulfilled. The comparisons between their culture and different cultures also make the children more tolerant of those who differ from themselves.

In the third grade, the community is studied. The child first studies his own community and compares it to its urban or rural counterparts. He then studies A California Mining Camp and Paris. In all these studies, the student draws out the unique features and the similarities of the communities. The Gold Mining unit and simulation game, in particular, are designed to lead children to discover that society needs a form of law and government beyond the structure that the family provides. If community laws are not made and followed, society disintegrates into a chaotic state.

Teaching Techniques:

To create a more enjoyable and productive learning experience, a variety of techniques and media are used to provide the students with information about the other countries and cultures. Maps, film, filmstrips, pictures, records, books, resource people, and role playing are among the materials and techniques used in the Social Studies program.

All available resources and ideas should be used to expand and enlarge the suggestions in the resource units. The units are only a collection of suggestions. They are not specific lesson plans; the teacher must use them to gain ideas for her own lessons, using the materials she has available to her. Whenever possible, she should also integrate the social studies with the other curriculum areas to make them more meaningful.

The teacher should look for ideas that will help the student to relate to and empathize with people of the other culture. Most activities call for small group instruction; however, some may take place with the total group.

As she plans a culminating activity at the end of a unit, the teacher should regard this activity as a means to an end rather than an end in itself. Such an activity should serve as an entree into a discussion about the culture.

Throughout the unit, the students should be involved in project-type activities which are complimentary to the concepts within the unit.

Throughout the study the teacher should keep referring to former units of study for comparison discussions concerning people of the various cultures as well as for comparison with our own culture. It helps to save information on charts, comparing one unit with another.

CURRICULUM INTEGRATION

Integrating the curriculum areas of the Mathemagenic Activities Program is not an easy task. Each of the eight curriculum areas was developed by specialists in that field. While all the specialists believed in similar principles of learning, they all worked independently of each other. Consequently, many skills and concepts overlap into other areas. Teachers are encouraged to integrate the separate curriculum areas when they contain overlapping concepts and skills.

The MAP staff, with the help of teachers in our program, has begun the task of identifying concepts and skills basic to combinations of curriculum content areas in order to eliminate unnecessary repetition and optimize general concept learning. The Mathemagenic Activities Program will continue to work toward a more integrated curriculum, but can do so only with the assistance of the classroom teachers, resource teachers, and aides who have gained expertise and insight from their practical day-to-day implementation of the curriculum.

The teacher should use the examples of curriculum integration which have been provided by the MAP, as well as the following guidelines, for finding other ways of integrating the areas.

Guidelines For Curriculum Integration

Do not integrate just for the sake of integrating! Any attempt at curriculum integration should stem from a legitimate need of the students.

The teacher should have stated objectives which she feels can be accomplished more effectively by using activities and skills from other curriculum areas to enhance and reinforce the learning or to avoid unnecessary repetition.

As you study the objectives for any lesson, take time to reflect back on the other curriculum areas' objectives; you may be able to find an activity in another area which reinforces and expands what you are teaching.

Always refer to the common skills or concepts to help students to become more aware of the usefulness of specific skills. For example, help students realize that the skills developed in math and science can be applied to determine the distance between Paris and their homes in the social studies program.

Remember, some lessons, such as language arts, are in sequence and should be presented in the order that they appear in the manual even though the topic may relate to other subjects. Be sure the child possesses the prerequisite skills before presenting him with a new skill. Be on the alert, however, for opportunity to move ahead those children who already have the skills or concepts of a particular point.

When combining lessons from different areas, be sure to achieve the objectives from all the areas. For example, when using a music lesson to enhance a social studies unit, try to achieve the musical skills listed as objectives in that music lesson.

Make notations in your manual for any lesson that could be logically correlated with another lesson. Share these with the MAP staff and with other teachers.

There are many possibilities available to the resourceful teacher who is willing and able to meaningfully relate common elements in the various content areas so as to maximize learning and minimize the time required to implement the MAP. Possibilities for integrating art and music, art and physical education, math and science, and language arts and social studies with all other areas are abundant throughout the curriculum.

Below, you will find suggestions for integrating a first grade social studies unit on the Japanese family with the seven other curriculum areas. We hope this will start you on your way to achieving a Mathemagenic Activities rogram in your classroom that provides opportunity for the child to learn basic skills and concepts under conditions that maximize his intellectual and social development.

EXAMPLE OF CURRICULUM INTEGRATION

Social Studies: Japanese Family

Language Arts

Writing

Write or dictate simple stories about various aspects of life in Japan.

Correspond with another class in Japan.

Compare Japanese characters and method of writing with your own system of writing.

Write Haiku (short Japanese poems). Also dramatize or illustrate the Haiku (mount Haiku pictures on cardboard to use as wall hangings).

Make individual booklets entitled "My Home and My Family" and "A Japanese Home and Family" by dictating or writing short captions and then illustrating them.

Oral Language

Perform simple, original plays and engage in role-playing activities about the Japanese (Life on a Japanese Farm, Eating a Meal in Japan, etc.). The students could make paper bag puppets and create a script about Japanese life to perform in a children's festival. For example, after studying the "kasmishibayo man" (paper play) in Making Music Your Own, the children could carry out activities similar to those of the paper man.

Learn the concepts of same and different by citing the similarities and differences between life in America and Japan.

Reading

The teacher could read A Pair of Red Clogs and the children could dramatize it.

Mathematics (some teacher activities for demonstration purposes:)

Compare the size and population of Japan with that of the United States.

Compute the distance between Japan and the United States.

Compare the Japanese and American currencies. Make change in both.

Measure the ingredients to make Sukiyaki.

Science

Try Origami, Japanese paper folding (bilateral symmetry to achieve balance from an aesthetic as well as practical point).

Compare the temperature and weather conditions in various sections of Japan with the weather in your own community.

Record the temperature and weather conditions for a two-week period and exchange their records with a class in Japan.

Art

Compare the aesthetic quality of Japanese and American floral pictures.

Draw pictures of Japanese flowers. Try Japanese flower arranging. Paint pictures of these arrangements. Draw the Bonsai tree.

Contrast the Bonsai tree with trees in your community.

Draw fish to be used to make camp kites for the "Japanese Boys' Day."

Make a bulletin board display entitled "The Other Side of The World" by coloring pictures.

Study Japanese wood printing and fish printing (Gyotaki) in conjunction with the art unit on block printing.

Music

Listen to selections from a Japanese recording and guess where they came from.

Sing and play the song "Cherry Blossom" which is in Exploring Music, Grade 1.

Guess the instruments played at a Kabuki play.

Classify the samisen into a family of instruments.

Sing and dance the Bon-Odori which the Japanese dance during the Bon festival.

Physical Education

Participate in a field day of skills (in the physical education program) for "The Japanese Boys' Day."

Perform Japanese dances.

Health

Describe how they feel when they listen to Japanese music or look at a Japanese garden.

Study Japanese customs such as respect for elders and good manners.

Study Japanese bathing customs, realizing the universal need for keeping clean even though the customs differ from culture to culture.

Compare the types of food eaten by the Japanese when studying the lesson "What Makes Our Bodies Grow."

INDEPENDENT ACTIVITIES

In addition to the more formally organized group work where the children are usually under the supervision of an adult, the children should have ample opportunity each day to engage in independent learning in specially designated areas of the room. Learning centers, learning territories, and enrichment corners are among the names given to these areas; however, essentially they are areas where a child may go to independently pursue his interests.

Whenever possible, there should be a learning center for every curriculum area to serve as a learning laboratory rather than as a place to occupy the child after he has finished his required work. One area might consist of a social studies project; another might be a quiet spot in the room where books make it an ideal reading corner. Each learning center should contain a multitude of opportunities; variety of experience in each is essential if we want to reach every child.

The learning centers enable each child to learn independently at his own speed with both the written "work-sheet" type and manipulative activities. Students should have the opportunity to interact freely with each other without the supervision of an adult. The size of your room and the number of children will determine whether you can have four learning territories or eight. Remember, changing these areas with new items of interest at appropriate intervals is essential. Although each child should be allowed to choose which center he works in, the teacher should encourage the child to move from center to center.

Examples of independent activities that the student might choose from at any one time in the classroom are:

In the language arts corner, he might select a supplementary reader such as Tuggy or Pepper to read to himself or to a friend. A trade book, attractively displayed, might also catch his attention. He might play a commercially prepared language arts game such as "Spill 'n Spell" or "Word Dominoes" or a teacher-made game such as "Fishing for Words" that was used earlier in a language arts word learning lesson. Paper, pencils, crayons, and paint should be available if he chooses to write and illustrate an experience story. The Language Master and listening station might also interest the student who has difficulty attending to a task when an adult is not present.

In the math corner, the student might enjoy continuing to build a "one-difference train" after it has been introduced in the math lesson on logic blocks. The volume demonstration set, practical scales and weights, liquid measuring set, and fulcrum and balance would provide excellent opportunities for the student to experiment with many of the concepts introduced in the Geometry unit as he measures and compares the volume of substances such as sand and water. Geo-boards and patterns to copy would also be challenging activities.

After the tangrams, mirror cards, and attribute games and problems have been introduced and the students instructed on how to use them, these would be very good additions to the science corner.

Every classroom should have a box of dress-up clothes in the social studies corner for the students to use as they role play various phases of life in other cultures. As the students do role playing during the regular social studies period, they will be eager to act-out these and similar scenes on their own. They might also want to continue working on a project such as a diorama to depict some phase of life of the Hopi Indians, read a book on one of the social studies units, or simply look at, feel, and touch the artifacts on display.

What better way to spend a few extra minutes than in a quiet corner of the room away from all the confusion, listening to a recording in the music corner? With mallet and resonator bells in hand, the student might also compose a piece of music himself or play a piece composed by another student.

Since most students enjoy being creative and "doing their own thing," an easel should be set up so the student can paint a picture that suits his mood at the moment. No art corner would be complete without a "junk box" to provide innumerable possibilities for the student to create a collage, picture, or interesting object.

Most primary age children prefer being active to sitting. Why not channel this into giving the student the opportunity to move around and to become more proficient on the balance beam or balance board at the same time.

Not all independent activities must be of the colorful, moveable, novel nature. Students, particularly in the third grade, need opportunities to do seatwork without adult supervision. Appropriate independent worksheets can help a student assume more responsibility for his learning activities.

CHAPTER III

NONINSTRUCTIONAL COMPONENT OF MAP

The Georgia MAP program does not have a special noninstructional program like the special curriculum materials which it uses. Rather it takes the position that there are certain noninstructional tasks which must be done in Follow Through, and the University of Georgia staff is to work with each community to perform these tasks using methods appropriate for that community.

Every teacher knows that a child who is hungry, tired, sick, or behaviorally out of control does not learn efficiently. Teachers also know that children who have parents who are interested in what the child is doing at school, and interested in their child's education in particular, tend to be the better and more interested students. Follow Through provides the resources and guidance that enable the teachers and the school to begin to solve some of these problems. The teacher's role in referring such problems and engaging the entire family in the educational process is crucial, especially to the children, but also to our program.

Nutrition

A hungry child and/or a malnourished child does not have the energy to learn--he cannot attend to what is going on in the classroom. There is increasing evidence that nutrition plays a cricial role in the development of the nervous system (which is not mature until five to seven) of which the brain is the most important part. For many years the school lunch program has been in operation to attempt the improvement of the nutritional status of children. This is a good start. Free lunches are generally available to all low-income Follow Through children without the use of Follow Through money. In the majority of schools, the lunch program is funded through another Federal program.

It is currently thought by some nutritionists that even more important than a good lunch is a good breakfast. Most teachers feel that the time of day when most learning takes place is the morning. It certainly would be beneficial if the children were not hungry at this time. We are making a special emphasis to have a breakfast program in all our projects. Teachers can be of great help if they will support this effort and encourage its use where established.

Teachers can also play a role in the nutrition program by continually monitoring and bringing to the attention of the Follow Through director, nurse, etc., the type, quality, and quantity of the food served in both the breakfast and lunch programs. These meals should have a high level of protein: milk, fish, eggs, meat, cheese, unbleached grains, etc. It is highly probable that the people responsible for preparing the food could improve it without a significant increase in cost and Follow Through can provide some assistance in improving these meals.

An additional approach to the nutritional problem should be provided through a parent education program. One part of the parent activities program should involve parent education of which a significant aspect could involve the importance of nutrition and practical suggestions on how to increase the nutritional value of food without increasing the money expended. Most communities have private or public programs that can supplement the food allowance or supply for those eligible. Where such programs are not available, it is within the capacity of Follow Through to start them.

Teachers and aides also can play a significant role in nutrition by talking to children about different types of food and what food does for the body. All children eat, but most children don't know what the function of food is. Teachers and aides can begin to develop an understanding on the part of the child about the importance of food and the functions of different types of food.

Medical and Dental Services

Each Follow Through project must provide for the complete medical and dental health care of its low-income children by making necessary arrangements for prevention, screening, diagnosis, treatment, and aftercare. Every child who is accepted for enrollment in the Follow Through program should have a Child's Health Record filled out by his parents and by the Follow Through nurse. The health forms provided by the Bio-Dynamics Corporation are strongly recommended as a system of record keeping.

Every low-income Follow Through child must receive complete physical (urinalysis, blood, etc.) and dental tests every other year (first and third grade or kindergarten and second grade). In addition, every year or every other year, each child should receive hearing and vision tests. Every child should also have all appropriate immunizations. The child's parent should accompany him to all physical and dental examinations.

Since the nurse or noninstructional person concerned with medical services is busy with physicals and screening tests, she probably will not be able to attend closely to individual children. It will, as usual, probably fall back upon the teachers and aides to keep a constant check on the physical health of each individual child in the classroom. The teacher or aide should quickly bring any medical problem to the attention of the nurse or medical assistant and be insistent that "her child" receives appropriate attention. The Follow Through program should have adequate money for providing appropriate medical attention for children from low-income families. If you have a problem getting what you consider to be appropriate medical attention for "your children," bring it to the attention of the liaison worker or General Consultant who should be able to assist you in either getting the attention or finding out what the delay is.

The Follow Through project should use existing sources of health care already provided by the school and the community. Medical assistance funds which are available through Title XIX, "Medicaid," or through public welfare programs cannot be duplicated with Follow Through funds. Services are often available through public or private clinics, programs for crippled children, or service clubs such as the Lions Club. These need to be secured because Follow Through does not have adequate funds to do the total medical program.

As with nutrition, very important aspects of the medical and dental component of Follow Through involve classroom teaching of the children and of parents. The degree to which the teacher and aides are able to develop medical and dental concepts and behaviors will significantly influence the child's continued medical and dental health.

Social Services

Social services are somewhat difficult to define because they can involve many different things. Generally, Follow Through does not have money to directly provide services to families; rather, the social service workers (social worker, noninstructional aides, nurse, parent involvement worker, etc.) should be aware of all the social agencies in their community, what services they give, who is eligible and who is the person to contact. Then as they visit the homes of Follow Through children they will have this type of information at their fingertips and be able to direct parents to agencies which might be of assistance to them. It is also helpful to let the agency know of referrals. Follow Through workers can also be of great assistance in helping parents cut the "red tape" of agency applications.

Every teacher and aide also needs to know the type of agencies available to the low-income families. You might ask the Follow Through social service staff to run a workshop on the different agencies. This information will help you, as teachers, make referrals to these Follow Through workers as you see needs reflected in children's behavior or as you see them during your home visits. When should you ask the social service worker for information about a child or refer a child to the social service workers?

1. if a child's clothing is not suitable--dirty, torn, lacking, inappropriate for the weather.
2. if the child's physical appearance is poor; if he is dirty, continually tired, etc.

3. when there is a noticeable change in a child's behavior-- if a usually happy child looks depressed and cannot become interested in school work, or a usually neat child becomes sloppy.

4. if a child is often absent. A child who is absent a lot will not progress academically. Excessive absences should be brought to the attention of the social service workers.

5. if a child seems to be upset when he comes to school in the morning or it takes him several hours to settle down. This may reflect family problems that a social service worker might be able to help with.

Psychological Services

Conventional psychological services have usually meant intelligence testing, and these services have been of little use to the teacher (except when the children she has referred have been put into special education classes). Often when a teacher refers a child for a psychological evaluation, what she is saying or hoping is that the referred child will be taken out of her room. While something of this nature may be appropriate occasionally, Follow Through hopes to be able to maintain most children within the conventional classroom.

We believe that a psychologist, to be most helpful, should work primarily with the teachers and aides to give them a better understanding of children and how to constructively control behavior within the school setting. A written report usually is not particularly helpful to a teacher. A psychologist should work with you to help you understand his findings and develop some plans for the particular child which can be carried out by the teacher and aides.

Your Follow Through project should have a form to be filled out requesting psychological services. This form should ask you to describe the referred child's behavior plus a few other items. The reason that we ask teachers to fill out a form is not just to increase paper work. Changing children's behavior is not a simple matter and will require some commitment from the teacher-aide team. Filling out a form indicates to some extent the teacher's willingness to work with the psychologist concerning a particular child. The teacher needs to make close observation of a child's behavior, when it occurs, and what happens to the child as a consequence to his behavior. This process is necessary if a psychologist is going to help you work with a particular child. Your psychological services should include: general meetings with the psychologist concerning individual children with specific suggestions given to you; follow-up meetings with the psychologist to assess how things are going and/or to determine changes in approaches to the particular child.

Parent Involvement

Parent involvement is a very important aspect of Follow Through because it 1) offers a means of interesting parents in their children's school work, 2) promotes communication between parents and between parents and Follow Through Staff members, 3) enables us to recognize some of our stereotypes of people and thus be more accepting of them as individuals, and 4) provides the opportunity for learning through group interaction.

Often a child's academic performance is directly related to the degree to which his parents are interested in the educational process. Parent involvement activities are a means of encouraging parents to become interested in their children's school work. As a result of this interest, the child becomes more motivated in school because his learning is reinforced at home by the parents encouraging activities which are consistent with his school work.

Another reason for the emphasis on parent involvement is that it encourages communication between all parents whether they be of different economic groups, nationalities, or professions, thus promoting the exchange of ideas, attitudes, and beliefs unique to each individual. Our Follow Through Staff members are eager to see more interaction between our parents and with our parents, for we place great value on their opinions and ideas. We realize the average citizen often feels powerless in affecting those things which influence his life. It is felt by those of us with the MAP that such open channels of communication will help us see what the parents are saying and help us listen to them.

Participation in MAP by parents also helps our staff and others to understand our misconceptions of different groups of people. All of us need to be sensitive to our stereotypes so that we don't perpetuate them. It is a natural tendency to overgeneralize about all people but especially about those from the lower economic class. Many of our Follow Through children are from this class structure. Have you recognized the contributions they bring from their life style or are you too busy seeing negative characteristics? Often we hear teachers complain about the parents of these children, their lack of concern about the educational system of their children. How often have we stopped to see whether their life style prohibits their participating when and where we want them to?

We must be innovative in involving them and then open ourselves to learn from them, for they have as much to give as we do.

Parent involvement has another function and that is to tap the resources of parents. Our parents are imaginative, creative, fun. Group activities provide the opportunity of making things for the classroom, the home, the child, of developing skills and abilities which make our lives more enjoyable and profitable, and of establishing relationships which make our lives more meaningful and healthy. One of your parents probably knows the very game you need to liven a rainy day. A group of parents would probably be delighted to be called upon to contribute in some way to the school program. Let's try to forget that it's often easier to do everything ourselves and remember that many people learn from a group experience and that it is a way of showing our parents how important they are.

What Is The Teacher's Role In Parent Involvement?

The teacher has many indirect roles to play in parent involvement, but the direct roles can be covered under two topics: parent-classroom visitation and teacher-home visitation.

Parent-Classroom Visitation:

Even though many teachers might think that parent-classroom visitation is a good thing, it is a normal reaction to be somewhat nervous when parents and other people are sitting around watching what is being done. It should be expected that having parents visit in the classroom will at first not be too much fun for the teacher. It has been noticed that after several experiences with visitors, teachers become accustomed to having people observe them and can carry on as they normally would without observers. The parent visitations should be scheduled within a classroom. Knowing that parents are coming and being prepared for them will make the visitation easier for both the parent and teacher. (We suspect that you will quickly become accustomed to having visitors and the scheduling will be no longer necessary.)

The MAP classrooms differ greatly from the classrooms which many parents remember from their early primary years in school. Consequently, a visit in which the teacher provides an explanation of the different techniques and approaches is often very enlightening to the parent.

When a parent or any observer comes to your classroom, do not stop what you are doing or change the planned activities. Be ready for visitors. Have an adult sized folding chair or two in your room for visitors. When the visitor arrives, have your aide (or one of your children if possible) greet the visitor and show him to a chair. You might give the visitor your lesson plan so that he or she knows what is going on. Have your aide or pupil invite the visitor to move around the room to the different groups if you are comfortable with this. When there is a break in your activity, you may go over and introduce yourself to the visitor and exchange a few words. Do not get involved in long conversations. If the visitor tries to engage you in conversation, say nicely that you have to get back to the children and offer a time when you could talk with the children and offer a time when you could talk with the visitor. Use the telephone. The telephone is a very flexible and efficient means of communication. If a parent has something he wants to discuss with you, why not say, "Can I give you a call tonight?" (Then be sure to call.)

Teacher-Home Visitation:

Since some parents may be reluctant to come to school, teachers and other Follow Through staff members are encouraged to make home visits early in the year to meet parents and assure them that they are welcome at school at any time. Parents who work or have many small children may not be able to visit the classroom, but may enjoy the repeated visits of the Follow Through teacher, social worker, or parent coordinator.

Visitation in the home by Follow Through staff members, parent involvement coordinators, social workers, and teachers may help acquaint parents with the program and put them at ease. Not every home visit will be successful, however. Some parents will resent the intrusion into their domain; others will be too busy to talk; some may be shy and embarrassed, and some may be actually hostile. There are valid reasons for these feelings. Some parents have not had visits from school personnel or other "authority figures" unless there has been trouble. Truant officers, probation officers, police, and health nurses may have come to bring unpleasant news. Teachers and principals may never have called before unless it was to inform the parents how "bad" or "stupid" their child was. No news from school was meant to be good news.

A child does not come to school from a void, but rather from a home which has greatly influenced him into becoming what he is. To fully understand a child we must also understand the home from which he has come and to which he returns each day. When you, a teacher or aide, visit the home and see the child in his natural surroundings, you can often understand why he reacts as he does to certain situations and you better understand his thought processes because you appreciate the former experiences he is building upon as he acquires new skills and understandings.

A home visit helps you to understand the parents better. Just as a classroom reflects the personality of the teacher, the home reflects the personalities of the parents. You can tell what values they place on various things or attributes such as cleanliness, happiness, a relaxed, child-centered home or a showplace for the town. As you visit in the home, you are able to relate to the parents or parent in the atmosphere to which he is accustomed. Our actions often reveal our feelings far better than our words. Observation of the relationship of the child at home with his mother and father deepens the teacher's understanding of the child.

A home visit helps the parents to understand you, the teacher, better. In their home environment, the parents can relax and be comfortable and listen to you and what you are saying, whereas at school they are uncomfortable, tense, and nervous and can only give partial attention to the things you are discussing about their child. A home visit demonstrates to the parents that their child is special to you, that you care enough to make the extra effort to understand him better. Frequently, a parent's relationship with the teacher is more comfortable after a visit. The parents may feel more comfortable discussing their problems or asking questions after the experience of socially interacting with the teacher in their home.

A home visit helps the child. When the important persons of his two worlds--home and school--get together, a child has a great team working for him. This is a time that he is able to have a special experience with the teacher, a time when he is individualized. The attention is focused on him, showing him that the teacher values him and his home. Home visiting takes time and energy, but it may be the wisest use of both so far as its results are concerned.

When you make a home visit, here are some things to consider. Do not descend on parents out of the blue. Let them know via telephone or a note that you would like to visit when convenient for them. It might be necessary to say you would like to visit by the end of the following week. This gives some structure for the parent to follow. Remember, he may not be eager to have you visit. Have something nice to say about the child. Bring some of the child's work with you and inform the parents of the different things you are doing with the child at school. Parents are a lot of help--if you can think of ways the parents can help the child in school or the parent can help you (cutting out pictures, sending art materials, etc.), that would be good.

If you have some problems with the child whose home you are visiting, see if you can bring this up in a nice way to increase our understanding or the parents' understanding of the child. This must be done quite carefully (and followed up frequently with phone calls to the parents, if phones are available) because some parents are very severe with their children when the school (which you represent) reports their child is "bad."

Invite the parent to come to visit the classroom. Teachers who have made home visits (some reluctantly), have reported an increased understanding and appreciation for the child as an individual, *and* several have noted dramatic changes in children after a visit to the home.

Community Involvement

Follow Through also wants to involve the community! Interested people in the community are welcomed as classroom volunteers. Community and religious leaders can generate support for and interest in Follow Through. Local industries may be happy to contribute surplus materials for use in the Follow Through program. In one community, a factory contributed several yards of denim which the parent workshop converted into pants for the children who needed them.

Since Follow Through is a relatively new concept in education, Follow Through staff members must try harder to communicate the goals of the program to those who do not understand them. (One way is by a local newsletter.) Even people within the school system who generally approve of the program, such as principals or educational supervisors, may get upset if they do not know what is going on. Therefore, resource teachers and individual Follow Through teachers should let their principals or supervisors who are not in Follow Through know when a consultant is coming, when a meeting is to be held, etc. If we treat them with respect, they will treat us with respect.

We hope that Follow Through will bring about fundamental changes which will help *all* children.

In some communities, Follow Through's influence has resulted in breakfast being available to all children; in many, better working schedules have evolved for all teachers; and, in one community, Follow Through's influence resulted in the hiring of a speech therapist. In all communities, the economy is helped by the jobs which Follow Through has made available to low-income residents. Also, in all communities, Follow Through personnel receive education which will upgrade job skills and raise standards of living. Community involvement and understanding are important--community change will remain long after Follow Through has departed.

Volunteers

In a real sense, Follow Through is trying to make education individualized to the needs of each child. Our small group instruction is an approximation of individualization. However, there are always children in a classroom who don't fit the groups either because they are slower than most children or more advanced than most children. These children can profit from some individualized instruction which can be provided by a volunteer.

We know that many teachers will feel that volunteers are fine in theory but not in practice. Follow Through has the resources to make volunteers practical. As with several new things, it is wise to begin using volunteers on a small, but regular, basis. Define the children who are in need of special help; pick activities which a volunteer can easily understand, and have the materials ready for use (games are good). Make volunteers' work meaningful, and they will be more likely to come back.

Volunteers in the classroom can be low-income parents, high-income parents, or community people. Let the person responsible for the volunteer program know what type of person you need in your classroom.

One of the most important reasons for developing a volunteer program is for insurance against the time when Follow Through no longer exists or when the program's funds are substantially cut. We feel that most teachers, although initially apprehensive about having aides working with them, now feel that they could not do without them. If Follow Through does not continue to be funded, those projects which have developed a strong volunteer program will be able to continue to operate with "aides" in the classroom. Additionally, two of our projects are sending children on to the fourth grade this year. If these projects had learned to use volunteers in the classrooms, this transition might be a lot easier.

Having volunteers in the classroom does not happen overnight or without planning. Since teachers do not have the time to recruit, screen, schedule, and train volunteers, each project should have personnel available for this purpose. However, in the final analysis, the success or failure of the volunteer program depends largely upon the teacher's effort. We hope that teachers and parents will request the support needed for a successful volunteer program.

CHAPTER IV

EVALUATION FOR PROGRESS, RESEARCH, AND GRADING

WHY EVALUATE

The need for careful and constant evaluation is one distinguishing feature of the Follow Through classroom. Teachers who have not previously been in the habit of carefully assessing each child's strengths and weaknesses in all subject areas sometimes become frustrated and annoyed at what appears to be "too much evaluation." While at first teachers may feel that time spent on testing could be better spent teaching, they gradually realize that these diagnostic instruments actually save time. If the children do well on a test, less time need be devoted to that lesson; if one or two children have not retained the material, then they can receive individual help and the rest of the group need not be bored by unnecessary drilling.

Follow Through, as mentioned previously, is a program which is designed to stimulate research in early childhood education. Constant evaluation is compulsory for successful research. The program must be assessed to determine its strengths and weaknesses; we must strive to strengthen the former and correct the latter.

Consequently, evaluation should be viewed by the teacher as something which happens daily, either formally or informally. It provides important feedback from the children for both the teachers and the developers of the program.

METHODS OF EVALUATION

Observation

What a wealth of knowledge can be gained from the careful observation of the child! Observation is a continuing process for the teacher to use to evaluate her students. Some suggestions in observing are:

1. Confine observation for evaluation to areas that cannot be evaluated by other means.
2. Limit observation to:
   a. one type of behavior at a time if it is for observing all children.
   b. all behaviors together, if it is for observing one specific child.

Anecdotal Records

Anecdotal records should be kept concise, clear, and confidential. Only pertinent information needs to be recorded. Look for facts and guard against value judgements.

Continuous Informal Evaluation

The teachers and aides should be continually evaluating each child with respect to every concept which is presented for the child to learn. This more or less informal evaluation basically takes the form of posing questions and problems which the child should be able to solve if he understands the concept. This type of evaluation should be a continuous ongoing process and is one of the major functions of the teacher.

Formalized Tests

These perodic tests, such as the Unit Mastery Tests in Language Arts, should help the teacher assess, by a standardized procedure, how her children have been learning. If the teacher has been carrying out the daily informal evaluation, she will rarely be surprised by the results of these semi-standardized tests. However, these tests are necessary to provide the liaison and resource teachers with a measure by which they can keep track of the progress of the classrooms. Although at the present time we have formal subject matter tests only in Language Arts, we hope to have these types of tests available in more areas in the future. Teachers are encouraged to do some unit testing where it is suggested in the teaching units (e.g., in science).

University of Georgia Evaluation

The University of Georgia has an evaluation program which is carried out in cooperation with the local project. This program involves pre and posttesting with standardized readiness and achievement measures. While the teachers may feel that some of the items and subtests on these measures may not seem appropriate for children or for the MAP program, this type of testing is necessary to compare the achievements of our children with those of children in different parts of the country. The pretest measure enables us to judge the performance at the end of the year within the context of where the children were at the beginning of the year. Thus, each classroom will be used as its own reference group and no unfair comparisons will be made.

We also pre- and posttest non-Follow Through classrooms within each community for comparison purposes. We are very careful to specify what the nature of the comparison group is so that no unfair comparisons are made. For example, it would be inappropriate to compare at the end of the year a Follow Through room with low readiness scores with a non-Follow Through room which had high readiness scores. Some comparison classrooms are similar to Follow Through classrooms; we hope that our Follow Through classroom makes more progress than these classrooms. In other comparisons, we might be very happy to find our Follow Through children doing as well as children in a comparison classroom. In yet another case, we might be very happy if our Follow Through children are doing almost as well as children in a comparison classroom. As you can see, the comparison of Follow Through classrooms to non-Follow Through classrooms in terms of achievement is a very difficult procedure which must be undertaken with much care.

National Evaluation

National evaluation of Follow Through Programs is conducted by the Stanford Research Institute (SRI). SRI employs a standardized achievement test approach to assess classroom learning. They compare Follow Through children with national norms for achievement and with the Follow Through children of different sponsors. SRI also coordinates other types of evaluation or assessment such as parent interviews and teacher interviews. SRI does not test in all projects nor does it test the same thing in all projects. Since the information which they collect will have a bearing on the future of the Follow Through program, teachers and aides should try to be as cooperative as possible in spite of their inconvenience.

WHAT YOU, THE TEACHER, CAN GAIN FROM EVALUATION

Teachers should be concerned with the type, amount, and timing of evaluation in their classroom. While more evaluative activities must go on in Follow Through classrooms than in normal classrooms because of the experimental nature of the program, teachers should ask questions about the evaluation and have some input into it. Teachers should also expect some feedback from the different evaluative measures used in their classrooms. At the time of the summer workshop, the University of Georgia personnel should be able to provide each teacher with some feedback concerning the achievement test results from her children during the previous year. Generally, a teacher should expect to be shown how her children performed on the standardized tests in respect to national norms, other Follow Through classes, and selected comparison classes. However, as stated before, what would be "good" or "bad" with respect to the comparison classrooms will have to be carefully specified for each classroom individually. Also, the test results sometimes indicate different areas of strengths and weaknesses in a teacher's teaching and can give some indication whether or not children of a particular ability level are being neglected by a teacher/aide team.

The best source of feedback concerning teaching that a teacher has is her children. Continual questioning, talking, watching, and listening to the children in her charge should provide the teacher with the feedback necessary to assess whether or not her teaching is getting across to the children. The next best source of feedback for a teacher should be the resource teacher. As the resource teacher views several classrooms, she should be able to provide the teacher with information about her classroom in relation to other classrooms. The liaison is also another feedback source for the teacher. The achievement test results are also a feedback source for the teachers but usually are available too late in the year to directly affect a teacher's behavior within the classroom.

GRADING

Grading is an ever present problem for teachers and school systems. The MAP program does not have a fixed policy with respect to the type of grading system that is used by a community. It seems to us that parents need to know two things about the progress of their children: 1) How well is their child progressing with respect to his ability; is the child making the amount of progress which the teacher judges that he is able to make. 2) How is their child doing with respect to what would be expected of a child at this grade level (the child's progress with respect to some objective standard). We would hope that all children would get A with respect to the first criterion; every child should be making optimal progress with respect to his own ability. We do not expect necessarily that every child would be working at grade level.

The most effective reporting system to the parent about his child's progress is probably the parent conference. We expect the Follow Through teachers have more direct contact with parents than do conventional teachers. Again, once the teacher has had personal face to face contact with a child's parents, it seems reasonable that the teacher might use the telephone to have additional more frequent contact with the parent. This type of contact is needed, particularly at grading times, so that the teacher can help the parents interpret what the grading system means.

There should be several parent conferences per year, with parents viewing their children's work and discussing their strengths and weaknesses. A general written progress report can also be given. Included in this report should be the child's rate of growth during the past year. While he may read below grade level, he may have made nine months' progress!

A positive, constructive report will be of most value to both parent and child. (Remember, the child almost always finds out what is in this report!) It is important to remember to reinforce the good points of a child's behavior and performance wherever possible in this explanation of the total performance of the child.

OTHER EVALUATIVE DEVICES

We need to measure the effects of Follow Through with other types of procedures besides the standard achievement tests. One measure we are currently using is attendence data--do children in Follow Through attend school more regularly than non-Follow Through children? We would like teachers, especially experienced teachers, to take some time to think about the ways in which Follow Through is affecting the children. Please think of ways in which the Follow Through children differ from children whom you have taught before. Please inform us of these differences and together let us think of ways to measure these differences so that we might demonstrate the positive effects of this program.

CHAPTER V

OTHER ASPECTS

AFTER FOLLOW THROUGH

Follow through is designed to follow the gains made in Head Start through the third grade. It is hoped that at the end of three years in Follow Through, the culturally disadvantaged child who normally begins the first grade at a much lower academic level than the middle class child will at least be able to "hold his own." If he can do this, chances are he will be able to "hold his own" throughout life.

The child who enters the fourth grade from a Follow Through classroom has had different experiences from the child who enters the fourth grade from a traditional classroom. The Follow Through student has been exposed to a wide variety of materials and equipment, a broader educational experience, more individual attention, and more freedom to pursue his own interests. When he enters the fourth grade, he may find himself in a much more traditional school setting with only one teacher, with emphasis on the 3 R's, with mainly textbook instruction, and with as many as thirty-five students.

What will happen to the Follow Through child when he enters the fourth grade? Hopefully, he will make the adjustment by continuing to be creative and searching and by assuming more responsibility for channeling his activities appropriately. If the child is not able to do this, he will probably be very unhappy and bored with school.

Two solutions are available--and we need to work on both. First, we can contribute to the fourth grade teachers' understanding of the Follow Through child's experience and prior learning. Second, we can work toward providing fourth grade teachers with the resources to apply MAP principles appropriate to the children at the fourth grade level.

How can we ease the transition? The first step should be to involve all people who are concerned with the transition and have them do everything they can to help.

If the community writes an acceptable proposal, the federal government _might_ put limited funds into fourth grade. If funds are not available from the federal government, perhaps you can find local funds that would provide more materials or at least some classroom aides for the fourth grade.

If no funds will be available for the fourth grade, the local system, sponsor, and parents should begin to generate plans that involve no financial burden.

Some suggestions are:

(1) Familiarize the fourth grade teachers with the Follow Through curriculum by inviting them to MAP in-service workshops during the second half of the school year.

(2) Place a fourth grade (ex-Follow Through) parent on the PAC to serve as chairman of the sub-committee on fourth grade transition.

(3) Conduct joint planning and discussion meetings with the third and fourth grade teachers.

(4) Schedule spring visits in the third grade classrooms for the fourth grade teachers.

(5) Encourage third grade parents to remain active as a group even after their children have left Follow Through. Encourage them to work with and through the school P.T.A.

(6) Move the third grade volunteers into the fourth grade with their class.

(7) Appoint a local staff member as liaison between the Follow Through program and the fourth grade. This liaison would maintain contact with fourth grade teachers and parents, obtain feedback from teachers and parents and utilize local and MAP personnel to resolve any problems occuring as a result of Follow Through.

CAREER DEVELOPMENT

We hope that all those who work for Follow Through will have learned something in the process and that Follow Through will provide them with the opportunity to be constantly improving their skills. Accordingly, the Follow Through concept of career development includes a well developed plan for the training and advancement of all staff members.

The Georgia model provides workshops and continuous in-service training for teachers and aides. During the year, consultants are sent to clarify the curriculum in specific subject areas. The liaison workers and resource teachers provide in-service training for teachers by demonstrating in classrooms, by conducting teachers' meetings, and by arranging for teachers to visit each other and share ideas. Our special Program-Project Coordinator for Comprehensive Services visits each community to help the noninstructional staff coordinate workshops and training sessions.

The concept of career development includes a well developed plan for advancement of all members of staff. This plan recognizes years of experience as well as professional advancement toward a marketable certificate or degree and reflects these things in a differentiated salary scale.

A supplementary training program is often included in the total career development plan; however, it is not a requirement since such programs are expensive, and funds are not available for all Follow Through projects to have a supplementary training program. Without supplementary training funds, the nonprofessional staff can be encouraged to pursue the G.E.D. (General Education Diploma), or Basic Day Care I or II certificate, two-year A.A. degree or four-year AB or BS degree as part of their personal career development plans.

Aides are encouraged to take education courses which will enable them to become more effective in the classroom. By continuing their education, many will be able to fulfill their dream of becoming a teacher some day. In several projects, some aides are nearing graduation and teacher certification.

Some employees are still working towards their high school diplomas or G.E.D. certification. Others, particularly health aides, are more interested in vocational courses for practical nurses. If a vocational school exists in the area, Follow Through employees are encouraged to take relevant courses which may range from cake decorating to consumer education.

Sometimes parents have become interested in either working for Follow Through or taking a course while attending a parent workshop. Some mothers, after making classroom materials and volunteering in the classroom, have applied for regular jobs as classroom aides. Others have taken a vocational course in nutrition after participating in Follow Through programs on canning or health.

For both the professional and paraprofessional employee, Follow Through tries to provide opportunities for growth and continued self-improvement.

ROLE OF CONSULTANTS

The MAP program has a group of curriculum consultants at the University who have worked with us for a number of years. These specialists have been directly or indirectly involved in the development of some of the curriculum materials we use and understand our goals and objectives. However, the University of Georgia consultants are not the only consultants which are available to the local projects, and individual communities might prefer to use other consultants in some instances. The MAP program does retain the right to approve the consultants who work with specific projects for specific purposes. The main reason for this is that we want to avoid the confusion which often results from too many "experts." Also, the MAP program has adopted one of a number of possible positions in respect to many educational issues. To have a consultant who has adopted another position would not be appropriate.

The function of a curriculum consultant is to assist with the implementation of a particular subject matter area: give underlying rationale, give practical suggestions on implementation, suggest alternative approaches when others fail, suggest alternative materials for special problems, etc. Consultants do not make policy decisions; they may give advice and influence policy decisions with respect to a particular subject, but the policy decisions are made by the local Follow Through and MAP staffs. Your interaction with a consultant should be confined to his area of competence. If you have other types of problems, they should be discussed with the local Follow Through staff and/or the liaison workers.

Consultants cannot make the decision or give you, the teacher, the authority to make a major deviation from the program as outlined by the local Follow Through staff and the MAP workers. Consultants may suggest that an individual teacher be allowed (on request) to deviate from the prescribed program in a particular way, but the final decision as to whether or not that is done rests with the Follow Through director, resource teachers, the MAP staff, and the individual teacher.

The use of consultants can be a big waste of money if the consultant is not suited to the task at hand or if there is a failure to specify the objectives to be reached. It is the latter of these conditions over which the teacher has some control. It is the responsibility of the resource teachers, in consultation with the MAP staff and teachers, to arrange and plan the consultants' visits. As teachers, you can make the consultant money well spent by formulating specific questions and problems before the visits and asking many questions during the visits. For a consultant to be of real help to you and the project, it is essential that he sees what you are doing with the material in his special area. We realize that this is not the most comfortable position for a teacher to be in, but we hope that the benefits derived by the teacher will make the initial discomfort worthwhile.

PARENTS' QUESTIONS ABOUT MAP CLASSROOM

Parents often are troubled by any difference which they see between Follow Through and non-Follow Through classrooms. The following are some questions parents may ask along with some suggestions for possible answers. Perhaps experienced Follow Through teachers will be able to cite other questions and suggest other answers. This might be a useful workshop activity.

1. Parent: Is Follow Through a form of special education? or, I don't want my kids in with those dumbies! or, Are you trying to tell me that my kid's retarded or something?

   Teacher: Follow Through is not special education; it is not for the retarded or slow learners. Follow Through is trying to use materials which allow children to learn at their own level and rate--fast or slow.

2. Parent: How can you do that?

   Teacher: The teaching materials which we use are set up so that things are taught in small steps. Concepts and skills are broken down into small parts and taught gradually. The child doesn't have to catch on to something all at once. Children are taught in small groups so the needs of each child can be met.

3. Parent: Doesn't that hold back the smart ones?

   Teacher: No. We usually try to see if the child knows the material before we try to teach it. If he already knows it, he goes on to something that he doesn't know.

4. Parent: I'm afraid my child won't learn all the subjects in Follow Through that he is supposed to get in regular school.

   Teacher: Follow Through has eight subjects, including most of those which are taught in traditional schools. Follow Through tries to teach about the same language arts, math, and physical education that traditional teachers do; but more science, social studies, art, and music are in the Follow Through curriculum than in most traditional curriculums at the primary level. Also, supplementary activities, such as geometry, are included in the Follow Through curriculum.

5. Parent: Why should Follow Through teach so many subjects?

Teacher: We are not trying to force unnecessary subjects onto the children. We expose them to these extra subjects in order to provide them with a broader range of experiences which will expand their mental development.

6. Parent: Don't children get tired learning all those things? I think children shouldn't have to work too hard.

Teacher: Follow Through tries to make the curriculum varied and interesting for the child. By trying to keep all children actively involved in an interesting activity, teachers find less boredom than in the typical traditional classroom. Teachers also provide time to meet the child's physical needs for rest. Snack time and appropriate rest and recreation periods are scheduled.

7. Parent: On the other hand, I don't want my child to play at school when he should work. This room looks more like a playroom than a school.

Teacher: The colored blocks and other manipulatory objects you see are learning materials designed to teach your child important concepts. Research shows that children learn better when they proceed from the concrete to the abstract. Therefore opportunities which involve all the senses in learning, where the child touches and manipulates objects, will help your child remember more in the long run than he would if he merely listened and memorized what the teacher said. The child needs to "discover" the answers to some of his problems. Then he has learned for himself the right answers.

8. Parent: Johnny Jones is in the same grade as my child (but not in a Follow Through classroom) and is in the second reader already. How come?

Teacher: One of the main differences in the Follow Through program is how we teach reading. At first it seems like we are going slower and, in a sense, we are. One of the reasons why children develop reading problems and hate to read is that they are pushed along faster than they can go and are continually struggling to read the material. In Follow Through, we don't allow a child to read a book until we are sure that he knows all the words in that book already. It looks like we get off to a slower start in reading but we are spending as much if not more time in teaching reading as is spent in the non-Follow Through classroom. But at first we play a lot of word games and things like that instead of trying to make the child struggle through a book where he doesn't know the words. There should be (or are, if you know so) fewer reading problems and the children should (or do) find reading more enjoyable.

9. Parent: I hear that aides teach some of the subjects and I don't want my child to have an untrained person teaching him. I don't want my child short-changed!

   Teacher: In our program, teacher aides are at all times under the direct supervision of the teacher. The teacher must plan all lessons, and she must know exactly what is going on in all groups. She must meet daily with her aides to discuss the progress of the children and to provide the aides with guidance. An aide should never be turned loose on her own.

   Follow Through provided pre- and in-service training for all aides to educate them as to how they could better perform their jobs. Also, many of our aides possess more knowledge and experience than the term "aide" implies. Many are enrolled in college, studying education.

10. Parent: If the aide has to be supervised, what good does she do?

    Teacher: Well, it does take some practice to use aides skillfully, but once the team is working well, children can have many more experiences with more adults present. In the old setup, many children wasted time while they waited for their turn in the reading circle or they waited to have the teacher check their work. Wasted time is minimal with aides.

11. Parent: Is Follow Through one of those experimental programs? I don't want my kid to be a guinea pig for any of those new fangled things.

    Teacher: Well, it is an experimental program. The government is seeing whether spending all this extra money in a community like ours makes any difference to the kids. But the things we are using--the materials, books, etc.--are all things that have been used in education for quite a while. The materials we use aren't really experimental--there is just a lot more of them and sometimes we use them in different ways than we used to. We also have lots of people helping us understand and use these materials. (This would be a nice time for a personal testimonial: With these new materials I've noticed that the children have 60% fewer cavities.)

12. Parent: Why do some of the children get free lunches and free dental and medical care?

Teacher: With this program, money can only be spent for those kinds of things when given to low-income children. In fact, the free lunches (check this for your community) are not paid for by Follow Through but by the school lunch program which is separate from Follow Through. The program can't spend money for medical and dental care for middle income children. [What medical services are available to everyone in the area from the County Medical agency in your area? You might direct the parents to this. You might agree with the parents that this aspect of the program isn't fair (as some people feel), but point out that that is the way it is funded, and remember, the classroom advantages are available to all children.]

APPENDIX A

WEEKLY SCHEDULE

Teacher Beverly Smith

Grade 1

TIME	MONDAY				TUESDAY				WED:	
	Teacher	A-1	A-2	Individual Activities	Teacher	A-1	A-2	Individual Activities	Teacher	A
8:15-9:00	Planning, Preparing Materials	Supervising Ind. (free Play) Activities	Supervising Ind. Activiti	Total Group	Planning, Preparing Materials	Supervising Independent Activities Total Group	Preparing Materials	Total Group	Supervising Ind. Activities Total Group	Prep Mat
9:00-9:30	Written Lang. Group 1	Lang. Arts (Supp.) Group 2	Lang. Arts (Supplementary Act.) Group 3		Written Lang. Group 2	Lang. Arts Group 3	Lang. Arts Group 1		Written Lang. Group 3	Lang Gro
9:30-10:00	Written Lang. Group 3	Written Lang. Group 1	Written Long. Group 2		Written Lang. Group 1	Lang. Arts Group 2	Lang. Arts Group 3		Written Lang. Group 2	Lang Gr
10:00-10:30	Written Lang. Group 2	Written Lang. Group 3	Written Lang. Group 1		Written Lang. Group 3	Lang. Arts Group 1	Lang. Arts Group 2		Written Lang. Group 1	Sup Ind. Gr
10:30-10:45	Break	Outside Free Play Total Group	Break		Break	Break	Supervise Free Play (Outside) Total Group		Supervise Free Play	Bra
10:45-11:15	Math (text) Group 1	Math (Supp. Act.) Group 2	Math Supervise Ind. Math Act. Group 3	Math Act. or Games Group 3	Math (text) Group 2	Math (Supplementary) Group 3	Math (Worksheets) Group 1		Math (text) Group 3	Mat (sup Gr
11:15-11:45	Math (text) Group 2	Math (Supp. Act.) Group 3	Math (Worksheets) Group 1		Math (text) Group 3	Math (Supplementary) Group 1	Math (Worksheets) Group 2		Math (text) Group 2	Mat (sup Gr
11:45-12:30 (Lunch)	Lunch	Supervise Rest	Story			Story	Supervise Rest Period		Story	Sup R
12:30-1:00	Math (text) Group 3	Math (Supp. Act.) Group 1	Math (Worksheets) Group 2		Math (text) Group 1	Math (supplementary) Group 2	Math (Worksheets) Group 3		Math (text) Group 1	Mat (sup. Gr
1:00-1:30	P.E Group 2	P.E. Group 3	P.E. Group 1		P.E. Group 2	P.E. Group 3	P.E. Group 1		P.E. Group 1	P Gi
1:30-2:00	Social Studies Group 1	Science Group 2	Prepare Materials or Supervise Ind. Work Gr. 3	Related to Social Studies Group 3	Social Studies Group 3	Science Group 1	Supervise Suppl. Act. Group 2	Supplementary Activities - Soc. St. or Science Group 2	Social Studies Group 2	Sc Gr
2:00-2:30	Music Group 2	Prepare Materials or Supervise Ind. Work Group 1	Art Group 3	Group 1	Music Group 1	Science Group 3	Art Group 2		Social Studies Group 1	S G
2:30-2:45	Math (Supplementary) Group 3	Supervise Supplementary Activities Group 2	Art Group 1		Music Group 3	Supervise Supp. Act. Group 1	Math (Supp. Act.) Group 2	Supplementary Act. Group 1	Music Group 2	M C
2:45-3:00	Evaluation	and Planning	with	Students	Evaluation	and Planning	with Students		Evaluation	and
3:00-3:30	Planning	and Evaluation	- Teachers	and Aides	Planning	and Evaluation	- Teachers	and Aides	Planning an	Ev

APPENDIX A

WEEKLY SCHEDULE

Week of Oct. 12-16 1970

WED;			THURSDAY				FRIDAY			
-1	A-2	Individual Activities	Teacher	A-1	A-2	Individual Activities	Teacher	A-1	A-2	Individual Activities
aring erials	Preparing Materials	Total Group	Planning, Preparation	Preparation	Supervising Ind. Act. Total Group	Total Group	Planning and Preparation	Supervising Ind. Act. Total Group	Preparing Materials	Total Group
. Arts up 1	Supervise Ind. Act. Group 2	Ind. Activities related to Lang. Arts Group 2	Written Lang. Group 1	Lang. Arts Group 2	Lang. Arts Group 3		Written Lang. Group 2	Lang. Arts Group 1	Supervise Supp. L.A. Activities Group 3	Related to Lang. Arts Group 3
. Arts aup 3	Lang. Arts Group 1		Written Lang. Group 3	Lang. Arts Group 1	Lang. Arts Group 2		Written Lang. Group 1	Lang. Arts Group 3	Supervise Supp. Act. Group 2	Related to Lang. Arts Group 2
rvise Act. up 3	Lang. Arts Group 2	Ind. Activities related to Lang. Arts Group 3	Written Lang. Group 2	Lang. Arts Group 3	Lang. Arts Group 1		Written Lang. Group 3	Lang. Arts Group 2	Lang. Arts Group 1	
ak	Break		Break	Supervise Free Play	Break		Break	Break	Supervise Free Play	
h plementary) oup 2	Math (worksheets) Group 1		Math (text) Group 1	Math (supervise Ind. Work) Group 3	Math (supplementary Group 2	Math Games Group 3	Math (text) Group 3	Math (supplementary) Group 1	Math (worksheets) Group 2	
h plementary) aup 1	Math (worksheets) Group 3		Math (text) Group 3	Math (supplementary) Group 2	Math (worksheets) Group 1		Math (text) Group 1	Math (supplementary) Group 2	Math (worksheets) Group 3	
ervise st	Prepare Materials		Lunch Prepare Materials	Supervise Rest	Story			Story	Supervise Rest	
h plementary) oup 3	Math (worksheets) Group 2		Math (text) Group 2	Supervise Math Games Group 1	Math worksheets Group 3	Math Games Group 1	Math (text) Group 2	Math (supplementary Group 3	Math (worksheets) Group 1	
E. roup 2	P.E. Group 3		P.E. Group 1	P.E. Group 2	P.E. Group 3		Health	Health	Health	
ience oup 3	Art Group 1		Social Studies Group 1	Science Group 2	Art Group 1		Social Studies Groups	2 and 3	Art Group 1	
ience roup 2	Art Group 3		Music Group 1	Math Group 3	Art Group 2		Supervise Ind. Act. Group 1	Science Group 3	Art Group 2	Group 1
ath roup 1	Supervise Supp. Act. Group 3	Group 3	Music Group 3	Science Group 1	Supervise Ind. Work Group 2	Group 2		Music Total Group		
Planning with Students			Evaluation and Planning with Students				Evaluation and Planning with Students			
luation - Teachers and Aides			Planning and Evalubtion- Teachers and Aides				Planning and Evaluation - Teachers and Aides			

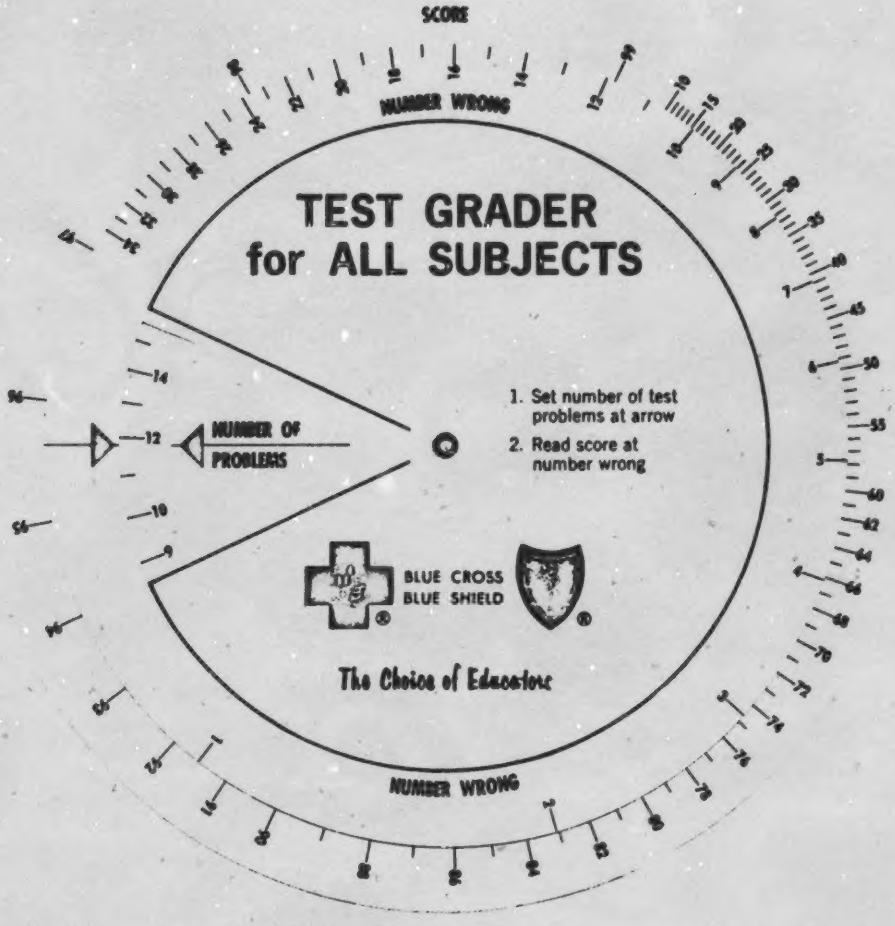
Daily Schedule and Lesson Plans

Teacher Beverly Smith **Aide** Mrs. L. Jones **Aide** Mrs. B. Brown **Date** October 12, 1970

Time	Teacher	Aide Jones	Aide Brown	Individual Activities
9:00 - 9:30	Group 1 - Written Lang. - Level A Lesson 30, page 56 Students write the letters: BINGO	Group 2 - Language Arts Supervise students while they play the lang. arts games	Group 3 - Language Arts Supervise students while they play lang. arts games.	Group 2 and 3 Language Arts Games
9:30 - 10:00	Group 1 - Written Lang. - Level B Lesson 1, page 59 Students copy experience stories written with words they have learned	Group 1 - Language Arts Extend teacher's lesson by: (1) Having them sing "Bingo" (2) Practicing writing the letters: BINGO	Group 2 - Language Arts Read the book The 500 Hats of Bartholomew Cubbins as preparation for teacher's lesson.	
10:00 - 10:30	Group 2 - Written Lang. Level A Lesson 3, page 82 Students learn that the writer of a book is the author	Group 3 - Lang. Arts Follow-up teacher's lesson by having students read and illustrate their stories, "The Tiger and I."	Group 1 - Lang. Arts Have students look through magazines for the letters, B,I,N,G,O. Paste them on paper and draw a picture of Bingo	
10:45 - 11:15	Group 1 - Math - Laidlaw, page 15 Students develop the concept of number 4 and the numeral 4.	Group 2 - Supp. Math Activities Continue lesson on Cuisenaire Rods. - Introduce the 4-rod. Review color and number names for rods	Group 3 - Math Supervise students while they are playing the math game	Group 3 - Math Games
11:15 - 11:45	Group 2 - Math - Laidlaw, page 25 Students develop the concept of number eight and the numeral 8	Group 3 - Supp. Math Activities 1-3. Cuisenaire Rods - Build trains by putting two rods end-to-end to prepare for teacher's lesson on addition.	Group 1 - Math - Worksheets Student draws a line from the numeral 4 to the sets containing 4 objects and draws 4 sets containing 4 objects each.	
12:30 - 1:00	Group 3 - Math - Laidlaw, page 50 Students begin simple addition.	Group 1 - Math Play game - "Jump Up" to review numerals 1-4.	Group 2 - Worksheet - Math Student draws a line from the numeral 8 to the sets containing eight objects and draws 8 sets containing 8 objects each	
1:00 - 1:30	Group 2 - P.E. Lesson 20, page 39 - Pri. Phy. Ed. through Movement. To improve skills in leaping and jumping.	Group 3 - P.E. Activity 1, page 108, Pri. Phy. Ed. through Movement Balance Beam	Group 1 - P.E. Activity 1, page 114. Pri. Phy. Ed through Movement - Yarn Balls	
1:30 - 2:00	Group 1 - Social Studies Hopi Family - Student realizes that families differ as to their organization for carrying out functions. Unit 3, page 11, act. 15	Group 2 - Science AAAS - Level A, Exercise C, activity 4 Students classify objects on basis of shape, texture, + size.	Group 3 - Students make bulletin board display depicting the members of their families and their respective roles	Group 3
2:00 - 2:30	Group 2 - Music A Structured Prog. for Very Young Ch. Stage I, lesson 10, page 21 - Duration	Group 1 - Supp. Act. - Science Introduce Mirror Cards Beg. Set #2	Group 3 - Art An Introductory Seq. Art Curr. Lesson 12, page 53. Students do line drawings of a tree.	Group 1 Mirror Cards
2:30 - 2:45	Group 3 - Math Shadow Geometry, lesson 4	Group 2 - Supp. Act. - Science Introduce Mirror Cards - Beg. Set #2	Group 1 - Art. An Int. Seq. Art Curr. Lesson 12, page 53. - Line drawings of a tree	Group 2 Mirror Cards
2:45 - 3:00	Review what has been accomplished today, and plan for next day.			
3:00 - 3:30	Teachers and Aides evaluate and do lesson planning			
3:30 - 4:00	Aides - Clean and prepare room for next day.			

APPENDIX C

PERCENTAGE WHEEL


SCORE
NUMBER WRONG
TEST GRADER
for ALL SUBJECTS
NUMBER OF PROBLEMS
BLUE CROSS
BLUE SHIELD
NUMBER WRONG

1. Set number of test problems at arrow
2. Read score at number wrong

The Choice of Educators

Mathemagenic Activities Program

C. D. Smock, Editorial Consultant

Sample By-Laws
for a
Policy Advisory Committee

prepared by

Carol S. Hoge[1]

1972

Prepared for the

MATHEMAGENIC ACTIVITIES PROGRAM

of the

University of Georgia Follow Through Program

C. D. SMOCK, Director

This report is based on activities supported (in part) by the Mathemagenic Activities Program-Follow Through, C. D. Smock, Director, under Grant No. OEG-0-8-522478-4617 (287) Department of HEW, U. S. Office of Education. However, the opinions expressed herein do not necessarily reflect the position of policy of the U. S. Office of Education, and no official endorsement by the U. S. Office of Education should be inferred.

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[1] Appreciation is expressed to C. D. Smock, the MAP Field Operations Staff, Project Directors, PAC Chairmen, and Parent Coordinators of each MAP Project for their contributions to these by-laws.

PS 011510

Preface

The Mathemagenic Activities Program is based on a theoretical conception of developmental change that is as applicable for communities and institutionalized organizations (e.g., the education system) as well as for classroom learning and parent education. The Policy Advisory Committee, whose members represent parents, community organizations and the general public, is viewed as a significant and necessary third component of an educational system designed for directing change necessary to meet the needs of all people in our changing society.

Together with the Local Educational Authority (School Board and Superintendent) and the professional educators, the PAC provides an appropriate channel for increased involvement of citizens in the educational process and a voice in educational policy decisions that affect the total community.

Mrs. Hoge is to be commended for her leadership in making explicit the implications of the MAP model for the organization, decision-making process, and planning strategies for PACs that will provide for the development of strong and effective leadership by the group. Completion of the task would not have been possible, of course, without the cooperation and participation of the MAP program and project staffs.

We extend our appreciation to all of you for your help and hope you will share with us your future experiences with these guidelines.

C. D. Smock, Director-Sponsor
Mathemagenic Activities Program
University of Georgia
Follow Through Program

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Mathemagenic Activities Program
University of Georgia Follow Through
C.D. Smock, Director
March, 1972

Sample By-Laws

The Policy Advisory Committee

ARTICLE I - NAME

This organization shall be known as the Policy Advisory Committee of the __________________ School District Follow Through Program and shall be hereafter referred to as the P.A.C.

ARTICLE II - PURPOSES

The purposes of the P.A.C. shall be:

A. To act as a channel of communication between parents, project staff, teachers, school administrators, and the Federal government;

B. To actively seek and represent the concerns and interests of parents, professional organizations, and public agencies in the Follow Through Program;

C. To maximally involve community resources in the delivery of Follow Through services;

D. To ensure the opportunity of participation in the program by each Follow Through parent;

E. To establish criteria for the selection of Follow Through staff personnel (paid and volunteer) and to participate in their recruitment and selection;

F. To continually assess the effectiveness of the Follow Through project by independent and joint evaluations, making recommendations to the director;

G. To develop plans for the allocation of P.A.C. funds;

H. To assist the Follow Through administrative staff in program budget revisions.

ARTICLE III - MEMBERSHIP

Section 1. Composition

This body shall consist of _____ members of whom 50% shall be comprehensive Follow Through parents and 50% shall be either low income or non-low income representative one of whom shall be a representative of CAA.

Section 2. Selection

A. Comprehensive Follow Through parent members shall be elected from representatives of each Follow Through classroom who were elected by parents of their respective classroom.

B. Follow Through parents shall elect the community representatives from concerned local citizens, community agencies, institutions, or organizations.

C. The CAA representative shall be appointed by the local Community Action Agency.

D. Personnel employed by the local L.E.A. and/or Follow Through shall neither be elected to P.A.C. positions nor hold voting privileges.

Section 3. Voting Rights

Discussion and motions are encouraged from anyone attending the meetings,however, only those P.A.C. members specific in Section 2. A., B., and C. can vote on motions before the P.A.C. The chairman votes only to break a tie.

Section 4. Term of Office

_____ members shall be elected to a two year term and _____ to a one year term.

Section 5. Termination of Membership

Membership of voting PAC members shall be terminated upon the third consecutive absence, unless prior permission was obtained, or when responsibilities have not been adequately fulfilled.

Section 6. Alternates

There shall be an alternate for each P.A.C. voting member. Such a member is responsible for contacting the secretary and his alternate prior to his anticipated absence.

Section 7. Resignation

Any member may submit his resignation in writing at any time. Such action does not deny the individual the privilege of re-election the next year.

Section 8. Vacancy

A vacancy shall be filled by the approval of a majority of voting members present.

ARTICLE IV - OFFICERS

Section 1. Titles

The elected positions shall include a Chairman, Vice-chairman, and Secretary.

Section 2. Election

The officers shall be elected by a majority of voting P.A.C. members at the first meeting of the new term of office.

Section 3. Term of Office

Each officer serves one yearly term and can succeed himself one term.

Section 4. Removal

If an officer fails to fulfill his responsibilities, he may be removed by a majority vote of the P.A.C. voting members.

Section 5. Vacancy

The Vice -chairman shall assume a vacated chairmanship. A vacancy occuring in the other elected positions shall be filled by a majority vote of voting P.A.C. members.

Section 6. Chairman (Duties)

The Chairman shall preside at meetings, call special meetings, establish committees, be an ex-officio member on all committees, and prepare an agenda for each meeting. He shall be responsible for interpretation of guidelines, implementation of P.A.C. By-Laws, and for coordination of P.A.C. with the Project Director.

Section 7. Vice-chairman (Duties)

The Vice-chairman shall preside in the absence of the Chairman, encourage the functioning of all committees, initiate interesting and informative P.A.C. programs.

Section 8. Secretary (Duties)

The Secretary shall be responsible for keeping minutes of P.A.C. meetings and mailing them to appropriate people, P.A.C. correspondence, notification of P.A.C. meetings, an updated list of P.A.C. members and addresses, providing copies of By-laws, rules of order and sub-committee members.

ARTICLE V -- SUB-COMMITTEES

Section 1. Standing Committees

The Chairman shall establish the following standing sub-committees:

A. Personnel
B. Evaluation
C. Parent Involvement
D. Career Development
E. Budget and Program

Section 2. Special Committees

The Chairman shall appoint special sub-committees as he sees necessary.

Section 3. Membership

Each sub-committee chairman shall be a voting P.A.C. member. Parents and community people other than voting P.A.C. members shall participate on each sub-committee.

Section 4. Term of Office

Each subcommittee shall serve one year.

Section 5. Rules

Each sub-committee shall meet at least once prior to the next meeting. The sub-committee chairman must report at every P.A,C. meeting.

ARTICLE VI - MEETINGS OF P.A.C.

Section 1. Regular Meetings

Monthly meetings shall be held at a time and place convenient to a majority of the voting P.A.C. members.

Section 2. Special Meetings

The Chairman can call special meetings at any time.

Section 3. Notification

Each voting member shall receive written or verbal notice within one week of the P.A.C. meeting.

Section 4. Quorum

A quorum shall consist of no less than 50% of the voting membership. No decision may be finalized unless a quorum is present.

Section 5. Conduct of Meetings

All meetings shall be conducted by rules of order decided upon by the P.A.C.

ARTICLE VII - AMENDMENTS

P.A.C. By-Laws may be revised or amended during any regular or duly called special meeting by a two-thirds vote of the voting P.A.C. membership if notification of the proposed amendment was given in writing at the preceding meeting and posted in the Follow Through office. Each voting PAC member should receive a copy of proposed amendments.

Personnel

The main function of the Personnel Committee is to assist with personnel concerns in an effort to share such responsibilities of the program. In carrying out its function, the committee should assist:

By actively seeking membership for PAC that will enable PAC to best represent concerns and interests of parents, public agencies, and professional organizations;

By establishing selection criteria for Follow Through staff personnel, whether paid or volunteer;

By establishing selection criteria for Follow Through comprehensive children;

By participating in the recruitment and selection of this personnel;

By insuring that each PAC member knows well the Federal Follow Through Guidelines and seek ways of acquainting all staff members with them;

By contacting each PAC member within two days of the next PAC meeting to remind them of the meeting; notify an alternate if the member indicates he cannot attend; and identify those members missing three consecutive meetings without valid reasons;

By recommending to PAC and the Follow Through director different ways of selecting PAC members.

Budget - Program

The main function of the Budget - Program Committee is to handle money matters responsible to PAC and to insure preparations for interesting, informative meetings. The committee should carry out this function by:

Assisting in setting the Follow Through budget each year by:

1) examining the expenditures for medical, dental, psychological, social and nutritional services as well as for instructional materials, equipment, and career development;
2) examining the expenditures on the administration of the project and the way they relate to the number and competence of personnel and role descriptions;

Planning the budget for PAC in September;

Writing PAC by-laws by December, 197-, and updating them each September by recommended amendments;

Recommending programs when needed;

Preparing PAC to conduct meetings by some rules of order.

Evaluation

The main function of this committee is to better acquaint PAC and Follow Through staff members with the importance of continually assessing our program and assisting in this assessment as much as possible. Means of accomplishing these goals are:

By assisting the Community Relations - Public Information Committee in putting together a speaker program (by contributing people with knowledge of evaluation and measurement);

By planning and conducting independent evaluation and monitoring activities to provide a basis on which to initiate recommendations for improvement of the program to the project director and University of Georgia project advisor;

By having the committee members plan and implement (or contract with an outside agency to implement) a systematic analysis of the Follow Through Program, its strengths and weaknesses, and report back to the entire PAC before budget preparations begin;

By actively seeking the information parents want and will accept in determining the effectiveness and ineffectiveness of MAP;

By assisting the director and appropriate persons in recruiting volunteers for collecting information, correcting test booklets, verifying information, and other evaluation activities;

By maintaining an up-to-date file of people trained and available to assist in evaluation activities;

By maintaining a file on the above information that is available to others on request;

By participating in and cooperating with evaluation activities initiated by groups external to PAC and/or Follow Through;

By developing and contributing, to sponsor, local, national, and other evaluation agencies, specifications of PAC information needs;

By exploring and implementing joint evaluation and monitoring endeavors which will provide information needed by the PAC and the other party (or parties).

Community Relations - Public Information Committee

The main function of the Community Relations - Public Information Committee is to inform the public about Follow Through and, in so doing, to encourage public participation in and support of Follow Through. (It should be understood that this committee can and should seek help from other PAC committees, especially the evaluation committee, and from outside PAC, using other Follow Through staff members and community people.) In carrying out this function, the committee should:

See that a monthly Follow Through newsletter is produced and distributed to Follow Through parents, staff, and relevant community people. The committee should see that the newsletter is the result of a team effort and not just the "chore" of one person. Committee members should see that several people assist in the actual production of the newsletter and that contributions for the newsletter come from many people in all areas of the program;

Seek to be aware of and to take advantage of opportunities to create effective public relations for the Follow Through program in the community. Committee members should make contacts with local organizations (i.e., Lions clubs, Rotary club, Jaycees, etc.) for the possibility of presenting information on Follow Through at their meetings. (The committee could consider designating certain people to develop a standard Follow Through presentation to be always available for use on such occasions);

Designate appropriate persons to establish relations with the local newspaper, radio, and TV stations;

Encourage visitors to the program. Committee members should invite community persons and representatives of local organizations and agencies to visit PAC meetings and Follow Through classrooms. The committee should make a special effort to have local congressmen visit the program. A committee of parents to act as hosts and hostesses would be an appropriate aim for this committee;

Be aware of opportunities to publicize the program on a state or even possibly a national level. The committee could do such things as compile lists of educational magazines which may print Follow Through articles, maintain a bibliography in which staff members should be interested, and keep a supply, in a convenient place, of free or inexpensive pamphlets parents might want to order;

Establish an open channel for receiving grievances and complaints from outside and within the program. The committee members should make provisions for non-PAC members to participate in the prompt and sympathetic consideration of these concerns and their solutions. The committee should strive to make all PAC members sensitive to the needs of the community and whether or not Follow Through satisfies some of these needs.

Parent Activities and Career Development

The main function of the Parent Activities and Career Development Committee is to assist the Parent Activities Coordinator and the Career Development Coordinator in implementing the best programs possible within the community. Because of the shortage of staff and the need to involve community persons, this committee should assist in the following ways:

In recruiting interested community persons under the leadership of the parent coordinator for involvement in various parent activities;

In helping to arrange transportation and baby sitting when necessary;

In obtaining adequate space for activities and classes;

In seeking new and different ideas for activities;

By visiting and participating in these activities;

By encouraging Follow Through staff members to take courses which will lead to an educational degree or certificate, or increased job skills;

By assisting the Supplementary Training Committee of Follow Through employees by having a member serve on that committee who can assist in locating courses for paraprofessionals and teachers;

In assisting the Supplementary Training Committee to locate funds for supplementary training;

In assisting advisory personnel to develop a MAP career ladder.

Narrative for Sample MAP By-Laws

for

Policy Advisory Committee

Article I - Name

The formal name is an arbitrary matter, however, most P.A.C.'s are noted as being part of a particular program in a specific school district.

Article II - Purposes

A. We envision the P.A.C.'s acting as a channel through which parents, project staff, teachers, and school administrators can voice concerns. Such an openness in communication is necessary for healthy airings of discontent, analysis of project needs, exchange of ideas, sharing of opinions, and freedom to make suggestions for the development of the project.

B. The Follow Through Program Manual, 1969, p. 7, states that P.A.C. will represent the interests and concerns of parents, professional organizations, and public agencies. However, we feel that the responsibility needs to extend beyond mere representation. P.A.C. should reach out to Follow Through parents, professionals, and other citizens to let them know the P.A.C. is genuinely interested in hearing what they have to say.

C. The Follow Through program relies on services of local agencies in fulfilling its obligation to extend comprehensive services to low-income Follow Through students. To insure that each student receives the best care possible, duplication of services must be minimized. It is advantageous to have representatives of these agencies on P.A.C. to assist in making decisions about professional services, to learn more about Follow Through, and to participate in a program controlled by the people.

D. The Follow Through Program Manual, 1969, p. 7, states the importance of communicating with parents and organizations to encourage their activity in the project. It also specifies that P.A.C. will assist in organizing parent activities. We feel the latter insures parent participation in the program. In order to increase parents' involvement in the operation of Follow Through, we feel Follow Through parents, other than voting P.A.C. members, must be included in each P.A.C. subcommittee.

E. The Follow Through Program Manual, 1969, p. 7, cites this role. The establishment of qualifications for personnel, the recruitment process, and the selection procedure are among the first decisions a policy-making body of an organization must consider. Since Follow Through is part of the school system, these matters are resolved on a cooperative basis with the local school administrators. If these responsibilities are new to a group like P.A.C., it is often necessary for the group to be informed about considerations that should be examined under each of the above processes.

F. Since the P.A.C. is the policy advisory committee of the program, they must understand what is happening within the project and must have a means of getting this information to the public. Perpetual assessment of the program is necessary for validating continued financial support and for analyzing current operations. The results of any studies must be shared with the project director and other relevant persons if it is to be meaningful.

G. P.A.C. is allocated funds for expenditure at its own discretion. Plans should be made to insure that: 1) as many people as possible benefit from this money, 2) the program gains from its expenditure, or 3) that the spending results in a stronger relationship between Follow Through and the local school(s), Follow Through and the school system, or Follow Through and the community.

H. Convinced that the P.A.C. should be well aware of the current level of functioning of the project, the members should be a necessary element in determining budget changes. Viewing the P.A.C. as an opportunity for input from people other than project administrators, MAP conceives a budget analysis as a most appropriate means of establishing needs and discovering priorities of parents and citizens concerned with early childhood education.

Article III - Membership

Section 1. Composition

According to the Follow Through Program Manual, 1969, p. 6.

Section 2. Selection

A. As originally conceived, P.A.C. is intended to offer parents the opportunity to contribute to the operation of a program involving their children. In order to afford as many parents as possible the opportunity to participate in the decisions made by P.A.C., MAP believes a means of listening to as many parents as possible is needed as well as a system for making voting P.A.C. members accountable to a certain group of constituents. The classroom representative system reinforces these two goals. The first requirement is a representative from each classroom. These options are then available for determining voting P.A.C. members: 1) each school Follow Through parent population can elect a school representative(s) from the classroom representatives for P.A.C. voting membership, 2) all Follow Through parents can elect P.A.C. voting members from a list of school representatives, or 3) each classroom representative can be a voting P.A.C. member. Election methods we have found ineffective are: a) allowing current P.A.C. members to submit a list of nominations to be voted upon either by themselves or by Follow Through parents, b) allowing Follow Through parents to choose one or more school representatives from the entire Follow Through parent population, c) allowing Follow Through parents to choose from the entire parent population, and d) a combination of a and b.

B. Generally community P.A.C. voting members have been referred to P.A.C. by individual agencies. Very often these representatives have not been responsible participants. The MAP P.A.C. is too vital to the project to allow its members a casual or neglectful involvement. Therefore, we recommend that the appropriate P.A.C. sub-committee obtain names of local citizens, to include representatives from specific agencies, institutions, and/or organizations, to be placed on a ballot for election by all Follow Through parents.

Procedures previously used and judged ineffective by the MAP staff include, 1) appointment by agencies of their representative, 2) involvement of first representatives throughout the years regardless of competency and interest, and 3) election by P.A.C. from list of agency recommended appointments.

C. As indicated by the Follow Through Program Manual, 1969, p. 6.

D. The MAP P.A.C. is envisioned as an action group for parents and local citizens, aside from Follow Through and LEA personnel. There are two primary reasons for this: 1) when an overload of people considered in power positions are on P.A.C., we have found that they become dominate figures either by inferred roles or accepted roles and 2) they have other means of participating in the Follow Through decision-making process, such as participation in regular staff meetings and program planning.

Section 3. Voting Rights

To again emphasize the necessity of and the desire for maximum participation of parents and interested persons, MAP assures the right of everyone to discuss the issues and to make motions.

The stipulation that the chairman votes only to break a tie is fundamental to the chairman's leadership role. Two undesirable consequences of his voting at all times would be: 1) that his vote might unduly influence the less secure of knowledgeable P.A.C. members and 2) that he would be forced to take sides in issues when his more important role is that of a mediator who insures the airing of all feelings.

Section 4. Term of Office

In order to provide continuity of membership, knowledge, and concern, representatives are to be elected on an alternating basis so that some serve one year terms and some two year terms. Experience has proven that it takes a year for P.A.C. members to become oriented to their responsibilities. A turn-over in the entire membership deprives the P.A.C. and the project of valuable, informed leaders.

Section 5. Termination of Membership

As previously mentioned, a MAP P.A.C must be composed of concerned and effective members. Other obligations often preclude a member's adequate participation in P.A.C. If such a person has to resign or has his membership terminated, he should not be prohibited from seeking a position the next year on P.A.C. There should be, however, guidelines established by P.A.C. for determining when such a person has ceased to effectively contribute to P.A.C. and the Follow Through program.

Section 6. Alternate

Since circumstances cannot be controlled so that each P.A.C. member can attend all meetings, alternates are an important part of the organization. They are usually selected in one of three ways: 1) each voting member has a specified alternate, 2) the chairman can appoint someone at the meeting to be an alternate, or 3) each member can be responsible for calling someone of his choice to represent him.

MAP prefers the first method because such an alternate would feel more like a part of the program, would probably keep atuned to what is happening in P.A.C. and with Follow Through, and would, if properly contacted, assure an alternate's being at the meeting. Responsible organization members always contact appropriate persons if they anticipate an absence.

Section 7. Resignation

According to general organizational procedures.

Section 8. Vacancy

Vacancies can be filled in one of several ways. These include: 1) the P.A.C. voting members' nominating and electing the new member, 2) the P.A.C.'s electing the new member from the classroom representatives, 3) Follow Through parents' electing a new member from the classroom representatives, or 4) Follow Through parents' voting on a list of nominees submitted by P.A.C.

Article IV - Officers

Sections 1 & 2

According to general organizational procedure.

Section 3. Term of Office

The option of a consecutive year in office should be made available to strong, effective P.A.C. officers because their roles are vital parts of the Follow Through program.

Section 4. Removal

As with P.A.C. members, guidelines should be established by P.A.C. for determining when one is performing in an irresponsible manner.

Section 5. Vacancy

According to general organizational procedures.

Section 6 - 8.

According to general organizations of such groups.

FIRST PRINTING

Teacher Training Plan

Edward J. Davis
Michael L. Mahaffey
William D. McKillip
Leslie P. Steffe

Psychological and Editorial Consultant
Charles D. Smock

A set of lesson plans for a three and one half day preschool workshop and ten half day inservice training sessions.

September 1974

Mathemagenic Activities Program
University of Georgia Follow Through
Charles D. Smock, Director
Paul Silverman, Evaluation Coordinator
Nancy Graham, Field Operations Coordinator

PS 011510

This report is based on activities supported (in part) by the Mathemagenic Activities Program-Follow Through, C. D. Smock, Director, under Grant No. OEG-0-8-522478-4617 (287) Department of HEW, U. S. Office of Education. However, the opinions expressed herein do not necessarily reflect the position or policy of the U. S. Office of Education, and no official endorsement by the U. S. Office of Education should be inferred.

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*All sessions are 45 minutes long unless stated specifically in this outline.

INTRODUCTION

In this Teacher Training Plan you will find: A schedule of activities for a three and one half day preschool workshop and six half days of inservice, a list of materials and publications needed by leaders and participants, and a lesson plan for each preschool and each inservice session. Each session is identified by title and by number, and arranged that way in this document.

To conduct this training program, two outside leaders are desirable. One of these should be a doctoral level person in the field of mathematics education who also has close contacts with public schools and previous experience in MAP. The other should be an experienced MAP teacher. Both should be capable of inspiring and leading teachers. In the operation of the program, the supervisors and Resource Teachers from the school system should serve as discussion leaders and where possible as session leaders. They should emerge as co-experts in the operation of a MAP program. Advance planning with local and outside leaders will be necessary to make this happen.

The Teacher Strategy Manual is used as a text in this program. Each section is introduced in this way: First, the participants study the section for 30 to 45 minutes, marking topics they have questions about; second, they participate in a small group discussion in which the leader records the questions which emerge; third, a lecture covers the section and the lecturer responds to the questions from the small group discussion; fourth, a large group discussion-question-answer period clarifies any remaining difficult points. In most cases the scheduling of sessions has been arranged so that the lecturer has time to consider the questions arising from discussion. However, the discussion leaders must take the responsibility to summarize and record these questions.

It is not assumed that the teachers will read the manual ahead of time or that they will study in the evening. No lesson plans are provided for the study sessions 3, 10, 18, and 25. The leaders will need to emphasize that this is not free time or coffee time -- this is time for reading. Be very directive about this...each teacher is expected to report back with a question!

As the week progresses, each teacher will have some slack time when her session concludes a little early or when she is not involved in a session. At these times the teachers should work through the Multibase Arithmetic Blocks Activity Cards. These should be set up and left for the week in some convenient spot. Near the end of the week session 24 will bring this together and crystalize what the teachers have learned. The purpose of this treatment is to have teachers experience independent learning through activities.

No mathematics topics are scheduled on Monday or Friday mornings. Other general MAP business will be scheduled at those times. The schedule for Friday afternoon will be left to the discretion of local leaders.

PRESCHOOL INSERVICE PROGRAM: ONE WEEK

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Presentations on the MAP classroom. Not covered in this plan.	Lecture: Review TSM I AND II #5	Lecture: Review TSM III #13	Lecture: Review IV #21	Presentations of a general nature. Not covered in this plan.
	Large Group Discussion #6	Large Group Discussion #14	Large Group Discussion #22	
	coffee	coffee	coffee	
	Experiencing MAP Principles: Logic Blocks #7	Guided work session: Developing Activities #15	Guided work session Planning your room for Activities #23	
	Teaching Materials Cuisenaire Rods #8	Teaching Materials: Geometry Materials #16	Discussion of MAP Activities #24	
Lunch	Lunch	Lunch	Lunch	Group Lunch With Inspiration and Speeches
Introduction and overview. (Team leader) #1	Teaching Materials: Geometry Materials Geoboards #9	Teaching Materials: MAP Manuals and Texts #17	Intense Study TSM V No Plan #25 Small Group Discussions #26	
"Activities in my class: (Teacher leader) #2	Intense Study TSM III No Plan #10	Intense Study TSM IV No Plan #18	Lecture: Review TSM V #27	
Intense Study of TSM I and II No Plan #3	Small Group Discussions III #11	Small Group Discussions IV #19	Large Group Discussion #28	
Small Group Discussion #4 TSM I and II	Teaching Material Counting Objects #12	Guided work session Developing Activities #20	How to file and organize activities #29	

* Designates times when teachers who are not involved or who finish early should do the MAP Activity Cards.

List of Materials

I. For the Instructors:

- A. Text "Learning Logic, Logical Games" Dienes & Golding*
- B. Gemtep Units*:
  - 1. Using Drill Activities
  - 2. Problem Solving in Elementary Mathematics
- C. Two complete sets of activity cards for use with Multibase Arithmetic Blocks (from Creative Publications)*
- D. Several sets of Multibase Arithmetic Blocks
- E. Keys, R. E. and Post, T. R. "The Mathematics Laboratory Theory to Practice," Prudle, Webber and Schmidt, 1973.
- F. Piaget in the Classroom, M. Schwebel and J. Raph (Eds.), New York, Basic Books, Inc., 1973
- G. Piaget, J. The Child's Conception of Number. London: Routledge and Kegan Publishers, 1952.
- H. "Learning Logic, Logical Games," Dienes and Golding, Herder and Herder.**
- I. Supplemental Math Materials I and II (Existing MAP Manuals)
- J. WNC I
- K. Biggs, E. E., and MacLean, J. R. Freedom to Learn Reading: Addison-Wesley, 1969.

II. For the Participants

- A. For each 15 teachers participating in the program a full classroom set of the physical materials described for the MAP mathematics program must be available.

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* After January 1976 these will be available from General Learning Press, 250 James Street, Morristown, New Jersey 07960.

** Absolutely essential for leaders!

B. For each teacher, a full set of MAP teachers' manuals, Teacher Strategy Manual, and the Teacher's Edition of the textbook and any related material used in her grade.

C. (Optional) The GEMTEP* Units listed in I, B. above.

Participants: Teachers K-3

Teacher Training Plan
Preschool Inservice Program
Session 1
Introduction and Overview

Purpose. The purpose of this session is to introduce this training program and to help teachers set their expectations for the next few days. As the team leader you may have modified the plan presented in this document. Regardless of the organization you choose to follow, there are some things we feel you should try to accomplish in this opening session. (Some of these may have been done before this meeting.) Here is our advice for getting things started right.

1. Have name tags for everyone -- including leaders.
2. Introduce each leader -- give some background on each and outline their responsibilities and area of expertise (include yourself).
3. Pass out a master plan for the week. If it is subject to change mention this. Let each teacher know what his/her responsibilities are in each type of session. For example, the "Intense Study" of chapters of the TSM are to be just that -- teachers should be responsible for underlining and otherwise marking in their manuals important points and questions they have. Refer to the TSM frequently - encourage the teachers to make notes in the manual as they read.
4. Stress the point that the MAP program is a philosophy of instruction -- it is not a curriculum. The MAP philosophy can be used, partially or extensively, in implementing any curriculum.

5. The MAP program (philosophy) can be *gradually* incorporated into a classroom. Emphasize this -- it may remove or lessen some feelings of apprehension or resentment the teachers may have.

6. Ask teachers: What are we as teachers really trying (very hard) to do? They will probably respond along lines of helping students to grow intellectually, socially, and psychologically. This is what the MAP program is all about! It is a *way* of presenting academic knowledge in such a way as to promote understanding, feelings of self worth, and cooperation among students. The MAP program gives the teacher *a way* of looking at students and subject matter so that learning is facilitated. The MAP program tries to take into account *how students think*, and *how subject matter can be organized to compliment the way students think*.

7. Give a brief overview of the chapters of the TSM. Try to show how they fit together to help teachers see how students think and to organize instruction in ways that compliment states of intellectual development.

8. Inform the teachers what the staff expects (hopes) they will gain from this series of meetings. Discuss the frequency and nature of the follow-up sessions during the school year.

Participants: Teachers K-3

Teacher Training Plan
Preschool Training Program
Session 2
"Activities in my class"

Purpose. This session is intended to give new teachers a general impression of the MAP classroom. This session should be conducted by a classroom teacher who has been successful in teaching mathematics in accordance with the MAP philosophy. This teacher should be enthusiastic!

While the presentation of her classroom procedures should be left to the teacher leader's judgment, we have a few suggestions to make. She may wish to consider:

1. Showing a film, videotape, or slides of her mathematics class in action.
2. Conducting one or two activities with a small group of children.
3. Telling how she got started -- how much extra work was required.
4. Giving an estimation of the benefits and drawbacks of implementing the MAP philosophy.
5. Providing a brief period for questions.

Session 3

No Plan Needed

Teacher Training Plan
Preschool Inservice Program
Session 4
Small Group Discussion

Purpose. The purpose of this session is to provide opportunity for the participating teachers to discuss the contents of Chapters I and II of the Teachers' Strategy Manual.

Background for Leaders. The leaders should have thoroughly reviewed at least the following material.

1. Teachers' Strategy Manual for Mathematics, Mathemagenic Activities Program, Follow Through Project, C. D. Smock, Director.
2. Reys, R. E. & Post, T. R. The Mathematics Laboratory: Theory to Practice. Boston: Prindle, Weber & Schmidt, 1973.
3. Piaget in the Classroom. M. Schwebel & J. Raph, (Eds.). New York: Basic Books, Inc., 1973.

Activities.

Activity A. Present a written outline of the basic ideas and questions contained in Chapters I and II of the Teachers' Strategy Manual to the teachers. Ask them to review the Chapters; emphasize the topics in the outline.

Activity B. Organize the teachers into groups with four or five per group. The task set for each group is, through discussion, to determine which topics in the topical outline need elaboration by the leaders. Be sure to include the following topics in the topical outline.

1. Essential characteristics of the MAP.
    A. An instructional philosophy and not a curriculum.
    B. Active learning.
2. Stages in cognitive development.

3. Self-regulation.

4. Mismatch

A multitude of questions may arise in these first small group discussions. In any event, be sure to have a list of potential questions well in mind. These could include:

1. What is the role of the teacher in the MAP?
2. How can I control my students when I let them be involved in activities?
3. What do I do with children who count on their fingers?
4. What is an activity?
5. How can I tell if a child is preoperational?
6. Should I try to make a preoperational child like a concrete operational child?
7. Can a preoperational child learn arithmetic?
8. (Look at the questions in Chapter I).

Purpose. The purpose of these sessions is to formalize the ideas presented in Chapter I and II of the TSM.

Background for Leaders. The leaders should have thoroughly reviewed the Background materials presented in Session 4. In addition, the leaders should have read Part II of:

Piaget, J. The Child's Conception of Number. London: Routledge and Kegan Paul, 1952.

Lecture Outline. The following is a suggested outline for the lecture over Chapters I and II.

I. Stages of Psychological Development
  A. Preoperational Stage
  B. Transitional Stage
  C. Concrete Operational Stage
II. Self-Regulation
  A. Assimilation
  B. Accommodation
  C. Mismatch
III. Active Learning
  A. Physical mathematical experience
  B. Abstraction and representation
IV. Examples of child's thought in various stages.

Large Group Discussion. The large group discussion should take place surrounding the central issues in the previous lecture. Provide time for a spontaneous question and answer period. Then if key points are not brought up, provide directed questions concerning the content of the lecture to assess comprehension of the basic principles.

Teacher Training Plan
Preschool Inservice Program
Session 7
MAP Principles Through Logic Blocks

Purpose. The purposes of this session are to (1) familiarize the teachers with the use of logic blocks and (2) to give the teachers an experience in the MAP principles of self-regulation and mismtach.

Objective: At the conclusion of this session the teachers should be able to lead groups in several of the simpler logical games and should be able to explain how "self-regulation" and "mismatch" were used in the activity.

References. You should know the material on logic blocks in Supplementary Mathematics Materials I and II and the logical games described in Learning Logic, Logical Games by Z. P. Dienes and E. W. Golding. The Dienes book is an essential reference for leaders conducting this session.

Activities.

Activity A: Introducing the Blocks. Follow the procedure described on pages 57 and 58 in the paragraphs in Section 1 beginning on page 57. Continue with the free play activities described on page 58, Section 2. (10 minutes)

Activity B: Attribute Discrimination. Select a few activities from those described on pages 58 and 59, Section 3. Our objective here is to quickly bring each teacher to the point where, being shown a block, she can name all four attributes. (10 minutes)

*EXPLAIN TO THE TEACHERS HOW ACTIVITY C IS TO BE CONDUCTED

Activity C: Logical Games. For the remainder of the session the leaders (including the local resource teachers) will work in small groups. Each leader will conduct a different game in his group. The teachers will be free to move from group to group until they find a game which challenges them. When they feel they have mastered the game they are playing, they must move on to another group, enter it and participate until they master that game.

Group		Game	Reference
1	*	The One-Difference Game	Page 18, #3.1
2		The 2, 3, and 4 Difference Games	Page 21, #3.2
3		The Mixed Difference Games	Page 21, #3.3
4		The Domino Game	Page 22, #3.4
5	*	The Halving Negation Game	Page 27, #5.1
6	*	The Hiding Game	Page 28, #5.2
7		The 20 Questions Game	Page 29, #6.1, 6.2
8		The Hoop Games	Page 33, #8.1, 8.2
9		Further Games selected by leaders as they judge to be appropriate.	

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*Easier Games

When all the players have moved past a simple game such as those starred (*) above, the leader may select a more difficult game and announce that he is again "open for business" with a new game.

Activity D: Discussion. When 10 to 15 minutes remain in this session, call the group back together. Encourage discussion of the relative difficulty or ease of the activities. Ask about this experience in self-regulation. Did they enjoy it? Were they able to find an activity which offered an appropriate mismatch? In this discussion encourage teachers to verbalize their feelings about "self-regulation" and "mismatch."

Teacher Training Plan
Preschool Inservice Program
Session 8
Cuisenaire Rods

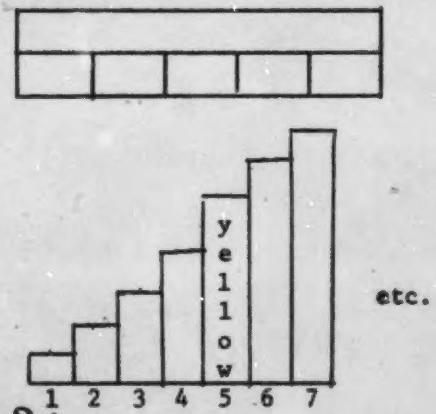
Purpose. The purpose of this session is to familiarize teachers with the structure and use of Cuisenaire Rods. At the conclusion of the session the teachers should be able to use Cuisenaire Rods to illustrate addition, subtraction, and number concepts.

Background for Leader. The GEMTEP unit "Whole Number Concepts II: Teaching Procedures," the material on Cuisenaire Rods in "Supplementary Mathematics Materials I and II," and manuals accompanying Cuisenaire Rods. Note that there are substantial differences in the approach recommended here and that taken in the Cuisenaire manuals.

Activity.

Activity A: Exploration. Give each teacher one carton of rods and tell the teachers to do whatever comes to mind. Teachers who need suggestions may be encouraged to use them for art, design, construction, or sorting activities. (5 minutes maximum)

Activity B: Numbering Rods. Each rod may be named by its color at first. However, an early objective is to identify each rod by number. This should be done in both of two ways. First a rod, for example the yellow rod, is compared to a row of white rods. Note that the yellow rod is as long as a row of five white rods. This is one reason for referring to the yellow rod as the five rod. A second reason is that the yellow rod is fifth in order from smallest to largest. Teachers should



construct the staircase and compare each rod to a row of white rods. Teachers should be able to pick up a rod when told to do so by number. (10 minutes)

Activity C: Modeling Addition and Subtraction. The teachers should be told that "making trains" or "making rows" is a way to model addition and should practice modeling these and other problems.

<table>
<tr><td>4</td><td>3</td></tr>
<tr><td colspan="2">What rod here?</td></tr>
</table>

"We find that the seven rod is as long as the 4 and 3 together, so 4 + 3 = 7."

<table>
<tr><td>8</td><td colspan="2">5</td></tr>
<tr><td colspan="2">A ten rod here.</td><td>What rod?</td></tr>
</table>

In modeling 8 + 5 = ☐ we find no rod which is as long as the 8 and 5 rods together. We use a ten rod and some other rod to equal the length of the 8 and 5. This leads to 8 + 5 = 10 + 3 = 13. Using 10 as a group is thus introduced.

Subtraction is modeled in a similar manner:

<table>
<tr><td>8</td><td></td></tr>
<tr><td>What rod here?</td><td>3</td></tr>
</table>

"We take a 3 rod from an 8 rod, and what rod is the same length as the part left?"

<table>
<tr><td colspan="2">10</td><td>4</td></tr>
<tr><td>What rod here?</td><td colspan="2">6</td></tr>
</table>

14 - 6 = ☐

You can mention the connection between subtraction and the missing addend. Make the point that these activities may be adjusted to the stage of development of the child by using the techniques described in Section III of the TSM.

Participants: Teachers of Grades K-3

Teacher Training Plan
Preschool Inservice Program
Session 9
Geometry Materials - Geoboard

Purpose. The purpose of the session is to acquaint the teachers with the suggested geometry content for the primary program. Also, to familiarize teachers with the geoboard and its utilization as a teaching aid.

Background for Leaders. The leader should be familiar with the following material.

1. Mahaffey, M. L. and Perradin, A. F. Teaching Elementary School Mathematics. Itosca, Ill. F. E. Peacock, 1973, Chapter 5.
2. Hooten, J. R. and Mahaffey, M. L. Elementary Mathematics Laboratory Experiences. Columbus Ohio, Charles E. Marrell, 1973. Chapters 4, 7, and 8.
3. Geometry, Mathemagenics Activity Program. Follow Through Program, C. D. Smock, Director.

Activities

Activity A. Provide each teacher with a geoboard on ditto representations. Allow the teachers time to construct any design they wish on the geoboard. Time should be taken to discuss some of the designs.

Activity B. Use Activity Sequence III (page 25) in Geometry by M. L. Mahaffey as a guide for this activity. Pages 25-30 will help review the vocabulary associated with the different polygons and provide experience with the geoboard.

Activity C. Use Activity Sequence VI (page 55) in Geometry by M. L. Mahaffey as a guide for this activity. Pages 55-58 should help stress the informal approach to geometry and the intuitive nature of the subject. Point out the fact that vocabulary is not our primary goal but exploration should be the "pass word."

Session 10

No Plan Needed

Participants: Teachers Grades K-3

Teacher Training Plan
Preschool Inservice Program
Session 11
Small Group Discussion of
Chapter III

Purpose. The purpose of this session is to (1) have teachers verbalize the ideas presented in Chapter III of the Teacher Strategy Manual (TSM), (2) ascertain any questions and difficulties the teachers have in understanding Chapter III and convey this information to the leader responsible for Session 13.

Background for Leaders. The leaders should have thoroughly read the entire TSM — especially Chapters III, V and VII. The leaders should have had an opportunity to discuss the contents of Chapters III, V, and VII with each other.

Guidelines for Discussion.

1. Discuss the nature of Exploratory, Abstraction and Representation, and Formalization and Interpretation Activities.
2. Examine the displays (figures) in Chapter III. Ask teachers to point out the significance of each display.
3. Hypothesize why preoperational children should not be forced to engage in abstraction representation, formalization and interpretation activities. Pose the question -- can they be allowed to participate in them if they wish? Our position on this matter is a yes answer to the question, provided the teacher does not expect preoperational children to have mathematical experiences from these activities.
4. Discuss physical experiences and mathematical experiences. (See Chapter VII.) This is beyond what they have read but an appropriate topic to discuss now.

5. Have the teacher distinguish between multiple embodiment and mathematical variability. What are they? How are they used? Present some activity and have the teachers use multiple embodiment and mathematical variability to modify the activity.

Participants: Teachers of Grades K-3

Teacher Training Plan
Preschool Inservice Program
Session 12
Teaching Mathematics: Counting Objects

Purpose. The purposes of this session are to (1) introduce teachers to mathematical foundations of counting, (2) the counting behavior of children, (3) strategies to teach counting, (4) create counting activities, and (5) review existing instructional materials dealing with counting.

Background for Leaders. The leaders should have thoroughly reviewed at least the following material:

1. Whole Number Concepts I: Learning Stages. *Atlanta Project*, College of Education, Department of Mathematics Education, University of Georgia, 1972.
2. Teachers Strategy Manual for Mathematics. Mathemagenic Activities Program, Follow Through Project, C. D. Smock, Director.
3. Reys, R. E. & Post, T. R. The Mathematics Laboratory: Theory to Practice. Boston: Prindle, Weber & Schmidt, 1973.
4. Teacher's manual and pupil textbook for grades K and 1 used in the school system.

Activities. The following activities are suggested.

Activity A. Discuss thoroughly with the teachers the mathematical basis for counting presented in Chapter VII of the Teachers' Strategy Manual.

Activity B. Make available to the participating teachers *Whole Number Concepts I: Learning Steps*, and thoroughly discuss the contents of this module with them.

Activity C. Discuss with the participating teachers strategies for teaching counting. Supporting materials should include *Whole Number*

Concepts I: Learning Stages, and the *Teacher Strategy Manual*, especially Chapters III and VI.

Activity D. Engage the teachers in creating counting activities for children and make available existing materials. Pay special attention to the learning-instructional model presented in the *Teacher Strategy Manual*.

Participants: Teachers of Grades 1-3

Teacher Training Plan
Preschool Inservice Program
Session 13
Lecture on TSM in Chapter III

Background Material. Chapters III, IV, VI, VII of the TSM

In your lecture you will want to summarize Chapter III. Include comments on at least the following:

1. The purpose of Chapter III is to help teachers understand the plan behind the activity sets given in Chapter V and to help teachers in designing their own activities. Since activities are the heart of the MAP program, this is a very important chapter.
2. The relationship between stages of intellectual development and levels of activities -- see first display in Chapter III.
3. The nature of each kind of activity -- give an example or two of each. Emphasize the meaning of the words exploratory, abstraction, representation, formalization, and interpretation. These labels are fairly accurate descriptions of each type of activity.
4. Pick one of the activity sets in Chapter V and discuss each part.
5. Show how the sequence of questions posed for creating specific (behavioral!) objectives also help in creating activities.
6. The role of symbols in each kind (or level) of activity. (See the lost display in the chapter.)
7. Be sure to address the questions relayed to you from the leaders in Session 11.

Participants: Teachers of Grade K-3

Teacher Training Plan
Preschool Inservice Program
Session 14
Large Group Discussion of
Chapter III

Background Material. Chapters III, V, VI, VII of the TSM.

Before asking for questions you might try to create an activity set with the large group of teachers. We suggest you pick one of the activity sets in Chapter V and re-create it here with help from teachers. It will probably expedite matters if you choose the general objective and give a large amount of guidance in listing the specific (behavioral) objectives. Have the teachers refer to the list of questions in Chapter III for creating objectives and activities as they suggest objectives. Then have them use the same list, and the objectives, to outline exploratory activities. Next outline abstraction and representation activities. Finally, obtain and list suggestions for formalization and interpretation activities. Make a display or copy of this activity set for all teachers.

You may wish to compare the activity set created by the large group with the one listed in Chapter V. The teacher's set will probably be longer and more creative than Chapter V's! Use this as a means to encourage them in creating activities. Point out that teachers working together can create and file a large store of activities in a relatively short period of time. Many teachers will be afraid or reluctant to tackle the job of constructing activities. They will need such encouragement.

Participants: Teachers of Grades K-3

Teacher Training Plan
Preschool Inservice Program
Session 15
Developing Activities

Purpose. The purpose of this session is to engage the teachers in developing activities for stated objectives. Teachers should work in small groups, or by themselves. Perhaps in the same small groups as in Session 11.

Background for Leaders. The leaders should have reviewed at least the following material:

1. Biggs, E. E. and MacLean, J. R. Freedom to Learn. Reading: Addison-Wesley, 1969.
2. Teachers' Strategy Manual for Mathematics. Mathemagenic Activities Program, Follow Through Project, C. D. Smock, Director.
3. Reys, R. E. & Post, T. R. The Mathematics Laboratory: Theory to Practice. Boston: Prindle, Weber & Schmidt, 1973.

Activities. The following activities are suggested.

Activity A. Select a set of objectives in Chapter V of the Teachers' Strategy Manual and review the activities designed for that set of objectives.

Activity B. Ask the participating teachers to design supplementary exploratory, abstractional representation, and formalization and interpretation activities for the set of objectives reviewed in Activity A.

Activity C. Ask the participating teachers to write specific (behavioral) objectives for a specified topic in grades K-3 not given in the Teachers' Strategy Manual; do this as a group. Use the guideline questions in Chapter III. It would help you if you have completed this task beforehand. This will help you to make suggestions when necessary. Don't be upset if the group comes up with objectives slightly different from yours.

Activity D. Repeat Activity C for another topic -- perhaps one chosen by the group. This may be harder for you to do since you will not have specific objectives previously worked out. Let the entire group work individually first before having an open discussion.

Activity E. Have the entire group suggest exploratory, abstraction and representation and formalization and interpretation activities for the objectives created in C above. Then have teachers work individually designing activities for the objectives formulated in D above. After 15 minutes or so, lead the group in sharing the activities they have designed.

Participants: Teachers of Grades K-3

Teacher Training Plan
Preschool Inservice Program
Session 16
Teaching Materials: Geometry Materials

Purpose. The purpose of this session is to familiarize the teachers with the geometry materials used in the mathemagenics program. This should be accomplished through actual hands-on activities.

Background for Leaders.

1. Geometry, Mathemagenic Activities Program, Follow Through Project, C. D. Smock, Director.
2. Shadow Geometry, Mathemagenic Activities Program, Follow Through Project, C. D. Smock, Director.
3. Scope and sequences of geometry for grades K-3 for text series used in the school system.
4. Hooten, J. R. and Mahaffey, M. L. Elementary Mathematics Lab Experience, Charles E. Merrill, 1973, Chapters 7-8.

Activities.

Activity A. Using Shadow Geometry as a guide, have the teacher perform the activities in small groups. After approximately 15 minutes, join in a large group discussion of the materials.

Activity B. Have the teachers participate in selected activities from the Geometry booklet, particularly from Unit I.

Activity C. Use Laboratory 7 and 8 of Elementary Mathematics Laboratory Experience by Hooten and Mahaffey for suggested activities. The point to make at this time is the importance of observations and discussion of activities the students have completed. To just complete an activity does not guarantee successful learning.

Activity D. Use Laboratory 4 in Elementary Mathematics Laboratory Experience for the activity. Your activity should utilize pages 24-41. While some of this material is beyond the scope of the elementary program, the teachers should be familiar with it in order to understand what future goals are being taught.

Participants: Teachers of Grades K and 1

Teacher Training Plan
Preschool Inservice Program
Session 17
MAP Manuals and Texts

Purpose. The purpose of this session is to familiarize teachers with the MAP Manuals for kindergarten (Matching, Counting, Patterns, Relations, and Operations) and for first grade (Matching, Counting and Supplementary Mathematics Materials).

Background for Leaders. The leader *must* be thoroughly conversant with these manuals and *should* have used them or observed them in use. He must be thoroughly conversant with the school system's adopted text for first grade and for kindergarten (if any). He must be aware of the school system's policy decisions on use of kindergarten materials in first grade.

Materials Needed. Each teacher must have a full set of MAP Manuals and the school's adopted text for her grade.

Activities.

Activity A: *Lecture*. This will be a 30 minute overview of the materials. It is designed to orient the teacher to the content of each item and the use to which it will be put. Make the following points in this lecture:

1. Content of each manual. Review briefly.
2. Policy on uses of Manuals
    a. Use all five manuals in K unless a kindergarten text is to be used. If using a kindergarten text, follow it and obtain supplementary activities from MAP manuals.
    b. Describe system policy on beginning first graders. Recommended policy is as follows but be alert for variations:
        (1) All first graders do *Matching* and *Counting*.

    (2) Those who work through Matching and Counting with ease go into first grade text. This should be early in the year.

    (3) Others may complete a kindergarten program in 1/3 to 1/2 of the year and then move into grade one text.

3. Using Supplementary Mathematics Materials:

   a. How to interleaf it into grade 1 text.

   b. How to generate other activities from the examples given. Emphasize that this is a series of examples, not a comprehensive list of things to do.

4. Relate the manuals and materials to the basic scope and sequence determined by the text. Relate the manuals to the objectives and activities in the TSM. Emphasize that all these are sources of activities.

From a practical point of view, the text provides a curriculum structure. Follow the text in scope and sequence. Where you can use activities (sources: the TSM, MAP Manuals, Supplementary Mathematics Materials, invent your own) to present and reinforce ideas in the text, do so. Trend toward less dependence on text but don't think you must make an abrupt change.

Session 18

No Plan Needed

Participants: Teachers of Grades K-3

Teacher Training Plan
Preschool Inservice Program
Session 19
Small Group Discussion of
Chapter IV

Purpose. The purpose of this session is to (1) have the teachers discuss the ideas presented in Chapter IV of the Teachers' Strategy Manual (TSM), (2) project the ideas into possible classroom behavior, (3) ascertain any question and difficulties the teachers have in understanding Chapter IV and relay this information to the leader responsible for Session 21.

Background for Leaders. The leaders should have thoroughly read the entire TSM -- especially Chapters III and IV. Also, a review of Reys, R. E. and Post, T. R., The Mathematics Laboratory: Theory to Practice, would be of value.

Guidelines for Discussion.

1. Discuss the different strategies for involving a class in an activity approach to mathematics. Stress the fact that there is not just one right way to begin.
2. Have teachers suggest ways that they have used to run an activity lesson.
3. Discuss the type of "mathematics objective" that will lend itself to the activity approach. Have the teachers select some objectives and explain why or why they are not appropriate for an activity presentation.
4. Discuss the role the child's stage (preoperational, transitional, or concrete operational) should play in selecting, assigning or developing an activity.
5. Have the teachers give reason for the need to arrange a classroom specifically for the activity approach. What would be wrong with just keeping the room the same old way.

6. Have the teachers discuss the need for evaluation and how and why it should differ from that used in a typical non-activity approach.

Participants: Teachers of Grades K-3

Teacher Training Plan
Preschool Inservice Program
Session 20
Development Activities

The purpose, background material, and activities for teachers can be the same as those in Session 15. Try to insure that teachers share any activities they design in this session and in Session 15. One point that may help some teachers in designing an activity is to think of something you can have your students do that gets them to do exactly what the objectives say. Also make the point that it is appropriate for a teacher to help a student in an activity or for students to work together.

Participants: Teachers of Grades 1-3

Teacher Training Plan
Preschool Inservice Program
Session 21
Lecture on TSM in Chapter IV

Background Materials. Chapters III, IV and V of TSM, Chapters 2, 3, and 10 of Freedom to Learn, An Activity Learning Approach to Mathematics, by Edith Biggs, and Chapters 4 and 10 of The Mathematics Laboratory, Theory to Practice, by Thomas R. Post and Robert E. Reys.

Guidelines for Presentation.

In presenting the lectures on Chapter IV you should summarize its content by covering the following points:

1. The purpose of this chapter is to give the teacher some alternatives for initiating an activity approach in her classroom. The most difficult problem the teacher will encounter with activities is getting started. This chapter should provide a viable means to do this.

2. There are several methods for getting into the activity "business"; however, the partial class approach seems to be most feasible. (As approved to jumping in with both feet and using the entire class.)

3. Discuss the relationship between mathematics objective, child's stage and assign activities. It is important that the teachers realize that the use of activities is not just a random process but must be planned with respect to each of these.

4. Select an activity and discuss (a) its mathematic objective, (b) the nature of the activity (exploratory, abstraction, etc.), and (c) what "stage or stages" would it be appropriate for.

5. Select some possible room arrangements from the references listed above (background materials) and present them using the overhead projector. Stress the need for a physical arrangement that allows for easy access and strategy.

Participants: Teachers of Grades K-3

Teacher Training Plan
Preschool Inservice Program
Session 22
Large Group Discussion of Chapter IV

Background Materials. Chapters III, IV and V of TSM, Chapters 2, 3, and 10 of Freedom to Learn, An Activity Learning Approach to Mathematics, by Edith Biggs, and Chapters 4 and 10 of The Mathematics Laboratory, Theory to Practice, by Robert E. Reys, and Thomas R. Post.

Guidelines for Discussion.

Before opening the meeting for questions, you should try the following activities:

1. Have the teachers, working in small groups, develop a possible method for recording student progress.

2. Let small groups of teachers collaborate on a design for arranging a classroom for using activities.

3. Discuss the different suggestions presented by the teachers in 1 and 2 and point out the fact that these are going to be different means of evaluation and classroom arrangement. Explain that in most cases this will be due to the individual classroom.

4. Open the meeting to possible questions regarding Chapter IV.

5. Evaluation should be made on each child individual performance. The teacher should not set up a singular criteria and then judge all students by this. Also, stress the need for continuous evaluation and some form of annotated report on the children. Use the report form given in Chapter IV as a possible instrument (p. 4) for recording and keeping track of each child.

6. Cover all questions that come out of the small group discussion of Chapter IV.

Participants: Teachers of Grades K-3

Teacher Training Plan
Preschool Inservice Program
Session 23
Planning your Room for Activities

Purpose. The purpose of this session is to make the teachers aware of the role that room arrangements play in a successful activity oriented program. The teachers should be encouraged to work in small groups so an easy exchange of ideas and suggestions would be facilitated.

Background for Leaders. The leaders should review the following materials.

1. Biggs, E. E. and MacLean, J. R. Freedom to Learn, Addison-Wesley Chapter 3.
2. Teacher Strategy Manual for Mathematics. Mathemagenic Activities Program, Follow Through Project, C. D. Smock, Director. Section IV
3. Reys, R. E. and Post, T. R. The Mathematics Laboratory: Theory to Practice. Boston: Prindle, Weber, and Schmidt, 1973.

Activities.

Activity A. Review Section IV F of the Teachers' Strategy Manual. Discuss the reasons and need for appropriate room arrangement when using an activity approach. Illustrate some suggested room arrangements that could be utilized. These may be found in each of the above suggested background materials for leaders. The participants should be encouraged to discuss the pro's and con's of each arrangement as it applys to his or her situation.

Activity B. Ask the participating teachers to design a room arrangement for her room, using furniture and equipment available to her at the present time. These plans should be discussed in small groups, modified through this interchange and then presented to the entire group.

Activity C. One primary concern of the teachers will be the lack of furniture to facilitate proper arrangement of the classroom. Use this time to discuss innovative uses of available material. Many teachers have learned to "make do" with what they have. This is a good time to share these ideas. It should be pointed out that the lack of furnishing should not stop the use of the activity centered instruction.

Teacher Training Plan
Preschool Inservice Program
Session 24
Discussion of MAB Activities

Purpose. The purpose of this session is to provide the teachers with expertise in utilization of the multibase arithmetic blocks in teaching numeration.

Background for Leaders. The leaders should have thoroughly reviewed the following:

1. Teachers' Strategy Manual for Mathematics, Mathemagenic Activities Program, Follow Through Project, C. D. Smock, Director.
2. Rie desel, C. Alan. Guiding discovery in elementary school mathematics. New York: Appleton-Century-Crafts, 1973. Chapters 1-5.
3. Dienes, Z. P. Building up mathematics. London: Hutchinson Educational, 1971.

Activities. It is critical to point out to the teachers that MAB is one device for teaching numeration of whole numbers and should be used as only one embodiment of numeration. Other embodiments should be presented along with MAB to ensure that the teachers have the realization that they should use materials accessible to them and should use more than one embodiment of base ten numeration with the children.

Activity A. (Exploratory Level) Being MAB's are structured materials, provide the teachers with sets of MAB's and let them do whatever they wish with them for a period of time.

Activity B. (Abstraction and Representation Level) Capitalize on Activity A, but ensure that each teacher, through her own activities realizes that:

1. Each "rod" consists of ten units;
2. Each "flat" consists of ten rods; and
3. Each "block" consists of ten flats.

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Ask directed questions in order to establish the above three facts. Point out aspects inherent in the MAB's which cause children difficulty. Namely, the child must imagine that a flat is ten rods and that a block is ten flats (or one hundred rods or one thousand units). Especially, in the case of a block, the child cannot directly perceive the "inside" units.

Activity C. It is important that the teachers are aware that they based their judgments in Activity B on rational counting. This realization will help the teacher see the relevance of the Cognitive stages to teaching numeration. Confront the teachers with the problem of how they are going to use the MAB's with their children. Include in your directions to the teachers the problem of representation using numerals and place value in numerals. Ensure that the teachers elaborate a well designed sequence of activities for using MAB's with their children through the formalization and interpretation level. Include in the discussion a philosophy for teaching numeration to preoperational children (see Chapter VI of the Teachers' Strategy Manual). The end product of the session should be written instructional strategies for using the MAB that can be duplicated for each teacher.

Session 25

No Plan Needed

Participants: Teachers of Grades K-3

Teacher Training Plan
Preschool Inservice Program
Session 26
Small Group Discussion of
Chapter V

Purpose. The purpose of this session is to (1) have teachers verbalize the essential features of an activity set, and (2) ascertain the questions and points of concern teachers have with Chapter V (these should be conveyed to the team leader for Session 27).

Background for Leaders. The leader should have read and have had the opportunity to discuss with other leaders Chapters III, V, VI, and VII in TSM. The leader should have used the format of Chapter V and have constructed at least two activity sets different from those given in Chapter V. Their leader should have copies of these new activity sets on hand for this session.

Guidelines for Discussion.

1. Have teachers summarize the general format for constructing an activity set. Some of them may object to writing out objectives, prerequisites, and teacher notes — they may feel only descriptions of activities are needed. Point out the value of this written material to themselves and to anyone else using an activity set. We believe that writing out objectives, prerequisites, and teacher notes help the creator of an activity set to create a better product and expedites the use of the activity set by one's colleagues.
2. Examine the activity sets constructed by the leader. The leader should describe, as far as it is possible to describe, how the set was constructed.
3. Point out that the activity sets given in Chapter V are in a sense "incomplete." Almost every activity can be modified (using multiple embodiment and mathematical variability) to create another activity. Also, more

activities of all types (exploratory, abstraction, representation, formalization, and interpretation) will probably need to be constructed to help children reach the objectives. In fact any activity set is "incomplete" -- new ones can always be added and old ones modified.

Participants: Teachers of Grades K-3

Teacher Training Plan
Preschool Inservice Program
Session 27
Lecture on TSM, Chapter V

Background Materials. Chapters III, IV, V, VI, VII of TSM. The lecturer should have had the experience of constructing activity sets similar to those in Chapter V and have copies on hand for reference.

In your lecture you will want to summarize the format used in preparing an activity set. While the typographical format is relatively unimportant, the need for objectives (general and specific), identification of prerequisites, activities at all levels, and teacher notes should be stressed. These help control and insure quality in any activity set and are a big help to other users of the material.

Other comments should be made on at least these points:

1. Any activity can become the basis for new activities through either multiple embodiment or mathematical variability. Give examples of this and point out places in Chapter V where this is suggested (in various activities and in the teacher notes).

2. An activity for a small group can often be changed into a large group activity or a teacher demonstration (multiple embodiment). Give an example of this. Emphasize that any teacher-led demonstration should involve as many students as is feasible and should follow some similar small group work on a related activity -- otherwise the demonstration may be meaningless to many children.

3. Specific (behavioral) objectives follow from general objectives. General objectives can often be thought of as "topics," e.g., the child learns the meaning of addition, or the child learns about congruent figures.

4. Respond to the questions and concerns obtained by the leaders of Session 26.

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Participants: Teachers of Grades K-3

Teacher Training Plan
Preschool Inservice Program
Session 28
Large Group Discussion of
Chapter V

Background Materials. Chapters III, IV, V, VI, and VII of TSM. It will help to have some of the other leaders primed to join in the discussion. These leaders should be encouraged to restate any questions from their group (Session 26) that they feel need further clarification.

Before asking for general questions, you might wish to go through some activity set -- either one in Chapter V or one constructed by one of the leaders (copies distributed to group). Point out the explorations in the exploratory activities, the abstractions it is hoped students will make in the abstraction level activities, and so forth.

If questions are slow in coming, consider discussing the role of symbols in the various levels of activities (see Chapter III - final section). Point out that symbols are "good things," they can help us in many ways -- without them we would have to write out all our mathematics in prose. Somehow finalize the answer to: "Forty-seven times fifty-two" rather than $47 \cdot 57$ seems awkward. However, while symbols are helpful, it is important that the referents for each symbol be understood by students. Otherwise we are teaching students to manipulate symbols. The sequence of activities from exploratory to interpretation is intended to help prevent symbols from being manipulated in a meaningless way.

Participants: Teachers and Aides of
Grades K-3

Teacher Training Plan
Preschool Inservice Program
Session 29
Creating Activities

Purpose. The purpose of this session is to encourage teachers in creating activities, give them practice in creating activities, and to have them share activities.

Activities.

Activity A. You could begin this session in one of two ways. Either by reviewing Chapter III of the TSM or by displaying sample activity sets created by some teacher in the program (preferably one of the group). If the latter introductory route is taken, have the teacher (or teachers) who created the activities discuss them -- especially how they were created and how they have been used.

If the review of Chapter III is used to begin the session, it should be followed by examples of activity sets -- preferably constructed by teachers in the group.

Activity B. At this point teachers could be placed in small groups (2 or 3 members from the same grade level) and given a set of objectives and asked to spend 20 minutes outlining some activities -- exploratory, abstraction and representation, and formalization and interpretation activities.

Activity C. Call the groups back together to present and discuss their activities. In discussing their activities, try and get each group to discuss their thinking. Did they use the guideline questions listed in Chapter III? Did they use some other devices to guide their thinking -- what was it?

Activity D. Ask the group how they are sharing activity sets? Do they use a filing system or is each teacher operating independently? If feasible, help them set up a plan for sharing activities.

__Activity E__. Use the time remaining to construct activities. Let the teachers place themselves in small groups.

Hopefully, duplicating equipment or some other provision will be made so that all of the activities created during this session can be shared. Perhaps these activities can be used to start some central library or file activities.

Participants: Teacher of Grades K-3

Teacher Training Plan
Inservice Session 1
Introducing the Inservice Program

1. In an informal lecture discussion setting, collect input from the teachers about their most immediate needs. Schedule sessions can be interchanged to move the most needed things to the early sessions. Present the plans for inservice, describing briefly what topics will be covered at each session.
2. Small group discussions, possibly organized by grade level. Topics to be discussed are:
   a. What are our most pressing problems?
   b. Who is doing well in using activities? Why?
   c. What activities are most needed now?
3. Lecture: Review TSM, Chapter III, especially the section in which the planning of activities is discussed.
4. Guided Warn Session. In the time which remains, assist the teachers to plan activities for the topics on which they are most needed.
   You may ask teachers to copy some activities on spirit duplicator wasters and run them off for the group.

Participants: Teachers and Aides
of Grades 1-3

Teacher Training Plan
Inservice Session 2a
Drill

Purpose. The purpose of these sessions is to familiarize teachers with the need for drill, the psychological background for drill, and with effective drill techniques. At the conclusion of these sessions, the teacher should be able to diagnose the need for drill, plan and implement an effective drill program, and evaluate the success of the program.

Background for Leaders. The GEMTEP unit "Using Drill Activities" and the reference material in that unit.

Activities.

Activity A: The Nature of Habituated Responses. Have each person make a card with his or her name on it. Use these like flash cards until each person can name everybody else in the class. Leader must apply principles in the GEMTEP unit in this activity. This will take 20 to 30 minutes and is practical in groups as large as 20 or so.

Activity B: The Nature of Habituated Responses. Make several sets of cards like this: On 12 cards write the 12 letters D to O, one letter to a card. On the reverse side write the number of that letter in the alphabet. For example, on the reverse side of D write 4, on the reverse side of K write 8, etc. Following the principles of drill, use these cards to teach the group to associate a letter with its number.

Activity C: Lecture. Review the topics in the GEMTEP unit in an informal lecture-discussion.

Activity D: Planning Session. Guide the teachers as they plan a drill program for their class. This program should have a pre-assessment, some limited and explicit statements of goals, and a post assessment. The program is to be carried on between in-service sessions 3 and 4.

Participants: Teachers and Aides of
Grades K-3

Teacher Training Plan
Inservice Session 2b
Logical Blocks

Purpose. The purpose of this session is to acquaint the teacher with the Logical Blocks and some of the concepts that may be taught through their use. This orientation will best be accomplished through action participation by the teachers and aides.

Background for Leaders. The leaders should be familiar with the following publications.

1. Diener, Z. P. and Golding, E. W. Learning Logic, Logical Games. New York, New York: Herder and Herder, 1966.
2. Supplementary Mathematics Materials I and II, Mathemagenic Activities Program, Follow Through Program, C. D. Smock, Director.
3. Teacher Training Program (Session #7)

Materials. Provide enough Logical Blocks so that there is one set for every four participants.

Activities.

Activity A. Review the activities of Session 7 of the Teacher Training Program. When completed, each teacher should have mastered each of the logic games presented in this session.

Activity B. Use this time to discuss (small group) the reasons for using attribute games in the primary grades. Also, how the participation in such activities can be accomplished.

Activity C. The time remaining in the period should be used for sharing "strategies" for the use of "Logical Block" activities.

Participants: Teachers and Aides of Grades 1-3

Teacher Training Plan
Inservice Session 3a
Drill

Activity A: Discussion of Results. In an open discussion format, encourage the teachers to report what happened in their program: What problems, progress, success, failure.

Activity B: Review. Through an informal lecture and discussion, review the material in the GEMTEP unit. Make strongly the point that now drill is expected to be a daily part of their activities!

Activity C: Planning. Each teacher should now work alone to produce a plan for the next two to three months of drill in her class. This should include both objectives and evaluation. In this long range planning, the specific activities to be used may be omitted.

Follow Up. When a resource teacher or a supervisor visits a teacher to observe her, some drill activities should be evident. Look for signs that the children are memorizing basic facts, but that the memory drill comes after the children understand the facts. Drill should be mainly verbal, fast-paced and exciting. Drill should take up no more than 1/3 of the time spent on arithmetic.

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Participants: Teachers of Grades K-3

Teacher Training Plan
Inservice Session 3b
Cuisenaire Rods

Purpose. The purposes of this session are to review the material on Cuisenaire Rods presented in Preservice Session 8, to extend the use of rods to multiplication, division, and relations and to create activities utilizing cuisenaire rods. When this session is over, the teachers should be able to use Cuisenaire Rods in the classroom to illustrate addition, subtraction, multiplication, division, number concepts and relations.

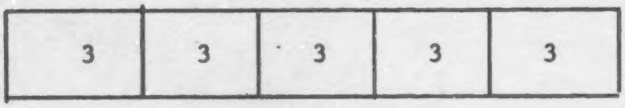
Background for Leaders. The GEMTEP Unit "Whole Number Concepts II: Teaching Procdures," the material on Cuisenaire Rods in "Supplementary Mathematics Materials I and II," and manuals accompanying Cuisenaire Rods.

Activities.

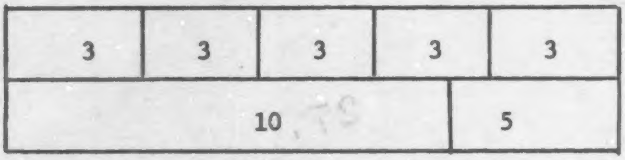
Activity A: Lecture-Demonstration. Review quickly the material presented in Preservice Session 8.

Activity B: Modeling Multiplication and Division. Each teacher will need to have a carton of Cuisenaire Rods. Show the basic connection between addition and multiplication and how this can be used to discover multiplication facts.

$5 \times 3 = 3 + 3 + 3 + 3 + 3$ so, using rods, a train of 5 three rods would mean 5×3.



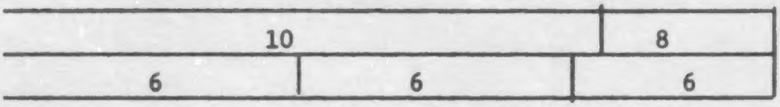
To find the answer to 5×3 we compare the train to ten rods in this way:



We see that 5 three rods make a train as long as a 10 and a 5 so 5 x 3 = 15. Direct the teachers to explore and illustrate other multiplication facts.

For a division example, we take 18 ÷ 6 ($6\overline{)\;18\;}$) and illustrate it as follows. First "construct" the 18 using a 10 and an 8.

Now we want to find out "How many sixes are in 18." We compare 18 to a row of 6 rods.



We see that it takes 3 sixes to equal 18 so there are 3 sixes in 18, 18 ÷ 6 = 3. Problems in division which have a remainder can also be worked this way.

Relations between numbers can also be observed by comparing lengths of rods and trains. A few examples worked with the teachers will serve to illustrate this.

Activity C: Planning Activities. With the help and guidance of the leaders, the teachers should spend the rest of the meeting preparing activities for their classes. These activities should utilize Cuisenaire Rods to teach appropriate topics which will be encountered shortly.

Activity D: Discussion. Have you been using Cuisenaire Rods? Why or why not? What are the problems, what are the benefits? Have you found some workable activities to share? How do your children respond? Try to keep this session constructive and solution oriented, steering away from a catalog of "Why nots."

Evaluation. When a resource teacher or supervisor observes mathematics instruction, Cuisenaire Rods should be evident at appropriate points. The teacher should be able to illustrate problems using the rods. Children should appear familiar with the rods as though the novelty has worn off.

Participants: Teachers and Aides of
Grades K-3

Teacher Training Plan
Inservice Session 4a
Problem Solving

Purpose. The purpose of this session is to familiarize teachers with the function and objectives of problem solving in the primary classroom and with techniques to stimulate problem solving. At the conclusion of these two sessions the teachers should be able to describe techniques for helping children solve a particular problem, to describe techniques for promoting growth in problem solving as a long range goal, and to implement these techniques in her classroom.

Background for Leaders. The leader of this session should be thoroughly familiar with the GEMTEP unit, "Problem Solving in Elementary Mathematics." It would be helpful to have copies of this unit available for the teachers.

Activities.

Activity A: Problem Solving Session. Using problems selected from the GEMTEP unit, lead a problem solving session in which the teachers work as a group to solve problems. Select the difficulty levels with care: Start off with one or two easy ones, one or two which are just right, and one which is too hard. Help the group enough so they get solutions for most of the problems they work on.

During or following this session, use this experience to make two points. First, in problem solving, appropriate mismatch is crucial. If the problem is too easy, solving it is not rewarding; if it is too hard it won't be solved. Second, problem solving seems to go through four stages: trying to understand the problem, devising a plan for solving it, carrying out the plan, and looking back at what has been done.

Activity B: Lecture. Cover the main techniques described in the GEMTEP unit. If these units are generally available, refer to them as you lecture. If not, summarize the main points on a mimeographed sheet. Emphasize again that there are two kinds of problem solving activities: working on a particular problem with one student or a group and planning a year's work for long term growth. There are techniques for each of these activities.

Activity C: Planning. For the remainder of this session, let the teachers select problems and plan problem solving activities for their classes.

Participants: Teachers of Grades 1-3

Teacher Training Plan
Inservice Session 4b
Multibase Arithmetic Blocks

Purpose. The purpose of this session is to demonstrate the use of the MAB's to the teachers using children of various characteristics.

Background for Leaders. Select children of the following types: (1) a child who, in your estimation, knows the place value concept; (2) a preoperational child; and (3) a concrete operational child who has not yet been introduced to place value. You may determine your choices of children in (2) and (3) through tests of conservation of one-to-one correspondence and in (1) through use of a test for place value. Read Dienes, Z. P. Building Up Mathematics. London: Hutchinson Educational, 1971.

Activities.

Activity A. Select a child who knows place value. Lead the child through the Exploratory, the Abstraction and Representation, and the Formalization and Interpretation levels of concept formation as outlined in the Teachers' Strategy Manual. Be sure to point out the constructive thinking and the analytic thinking the child engages in. Constructive thinking will most likely take place at the Exploratory Level and analytic thinking as the Formalization and Interpretation Level.

Activity B. Select, if possible, a child who is concrete operational but who has not yet been introduced to numeration. Lead this child as far as you can through the three learning-instructional stages using the same techniques and materials as you used in Activity A. Undoubtedly, the child will tire more quickly than the child in Activity A but, nevertheless, he should make certain reflective abstraction and representations (such as 53 being five tens and three units). Point out essential differences between this child and the child in Activity A. For one thing, this child will engage almost totally in constructive thinking and will tire of the tasks before the learning cycle is completed, necessitating a return to the learning cycle at later dates. Nevertheless, point out that the child did engage meaningfully in the tasks in that mathematical experiences were attained.

Activity C. Select a preoperational child who has not been introduced to numeration. Lead this child as far as you can through the learning cycle as in the above two activities. Point out that this child engaged mainly in physical experience, not making reflective abstractions, but yet being able to perform some aspects of the tasks. Encourage the teachers to give such children activities designed at the Exploratory stage and not attempt to force the child to make reflective abstractions.

Activity D. Select children for each teacher to work with at the three identified types. Supervise each teacher carefully, discussing what the teacher does in terms of the model presented in Chapter VI. Be sure to vary the children among the teachers so each has an opportunity to work with various types of children.

Activity E. Discuss the model presented in Chapter VI with the teachers and how they can improve their instruction through its use.

Participants: Teachers and Aides of
Grades 1-3

Teacher Training Plan
Inservice Session 5a
Problem Solving

Activity A: Discussion. Encourage full discussion of the way problem solving activities have worked in the classroom. Teachers can and will share difficulties and solutions which have worked out for them. Normally, some people will report a positive, exciting experience and this will encourage others.

Activity B: Lecture. Review the basics of the GEMTEP unit which were covered in the previous session. Concentrate on the techniques in the unit which will help teachers overcome the difficulties mentioned during the discussion. Add to your points the difference between a routine story problem and a problem requiring original thinking.

Activity C: Continued Planning. Help teachers formulate short and long range plans to promote problem solving. Also, help teachers express these plans in terms of activities so that the problem solving can fit into the activity teaching format.

Evaluation. When a supervisor or resource teacher stays with a teacher for several days, problem solving activities should be evident on most days. Both "routine" and "original" kinds of problems should be evident and the teacher should be involved in discussion, not merely assigning problems to work.

Participants: Teachers and Aides of Grades K-3	Teacher Training Plan Inservice Session 5b Geometry: Geoboard, Bending, and Stretching

Purpose. The purpose of this session is to (1) acquaint the teachers with the geometry materials available for use in their classrooms, (2) to become familiar with the use of the geoboard through activities, and (3) to develop some activities which would utilize the instructional materials presented.

Background for Leaders: The leaders should be familiar with the following materials:

1. Geometry, Mathemagenic Activities Program, Follow Through Program, C. D. Smock, Director.
2. Bending and Stretching, Mathemagenic Activities Program, C. D. Smock, Director.
3. The leader should be familiar with the geometry topics covered in grades K-3.

Materials Needed. Provide each teacher with a geoboard and copies of the above mentioned activity units if possible.

Activities.

Activity A. You may refer to the Teacher Training Plan, Session 9. Select enough such activities to review the teachers on the mechanics of the instructional aid.

Activity B. Select a small number of geometry concepts taught in grades K-3 (such as area, shape identification, length, etc.). Show the teachers, through participation, how the Geoboard may be applied to teach those topics. Have the teachers discuss the activity, with respect to its application in the classroom.

Activity C. Select a geometry topic, for which the Geoboard is appropriate, and ask the teacher to develop an activity to present this topic. In this activity it would be wise to have the teacher work in small groups. Also, allow time to discuss the various activities the teachers develop.

Activity D: Lecture. Discuss the main ideas described in the Bending and Stretching unit. The emphasis of the use of this unit should be that of making the student aware of the topic, not one where the student is required to memorize a number of facts. It would be useful to have the teachers participate in selected activities from this unit.

Activity E. For the remainder of the session, if any, let the teachers work together to plan geometry activities for their classes.

Teacher Training Plan
Inservice Session 6a
TSM Chapters II and V

Purpose. The purpose of this session is to present the teachers with the MAP model for learning and teaching mathematics and a set of activities to be used with children designed using the model.

Activities.

Activity A. Review Chapter III of the TSM, supplementing the chapter with the contents of Chapter VI whenever necessary and desirable.

Activity B. Review a scope and sequence chart from some commercial elementary school mathematics program for grades K-3.

Activity C. Review the objectives in the TSM for grades K-3 and contrast them with the scope and sequence chart reviewed in Activity B. The purpose of these two activities is to (1) ensure that the teachers do not view the objectives in the TSM as complete, and (2) to gain knowledge of what has not been covered in the objectives presented in the TSM.

Participants: Teachers of Grades K-3

Teacher Training Plan
Inservice Session 6b
TSM Chapters II and V

Purpose. The purpose of this session is to present the teachers with the MAP model for learning and teaching mathematics and a set of activities to be used with children designed using the model.

Activities.

Activity A. Ask the teachers to study Chapter II of the TSM and discuss it with them, emphasizing its connection with Chapters III and VI.

Activity B. Ask the teachers to study the activities presented for Grades K and 1 in the TSM.

Activity C. Discuss the activities presented for grades K and 1 with the teachers concerning (1) the distinctions made among the different learning-instructional levels and (2) concerning how they could implement the activities in their own classrooms.

Activity D. Repeat Activities B and C for Grades 2 and 3.

Guidelines for Implementation of the
MATHEMAGENIC ACTIVITIES PROGRAM

Prepared by the MAP Staff

May 1975

Mathemagenic Activities Program
University of Georgia Follow Through
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PS 011510

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Appreciation is expressed to all past and future MAP staff members for their help in the preparation of this report.

Mathemagenic Activities Program
University of Georgia Follow Through
C. D. Smock, Director
May, 1975

MATHEMAGENIC ACTIVITIES PROGRAM:
Guidelines for Implementation

I. PROGRAM GOALS AND PROCESSES

A. Introduction. The Mathemagenic Activities Program (MAP) for early childhood education is congruent with those philosophical, psychological and educational traditions which assume cognitive and affective development are products of interactions between the child and the environment. Mathemagenic activities are, literally, those which "give birth to learning" of a "scientific" type; i.e., activities that promote development of intellectual processes necessary for "construction" of an understanding of the physical and social environments. MAP has much in common with programs that emphasize "learning by doing" and/or rely on individual initiative for decision-making and selection of educational activities. The Mathemagenic Activities Program differs in that it is based on the principle that disequilibrium between different cognitive systems and/or between intrinsic functional structures and environmental structures is a basic necessity for intellectual development.[1]

Sequentially structured sets of curriculum materials (or recommended sequences from basal texts) and processes are designed (for children between the ages of 4 and 8) so that continual "challenges" to learn are provided.

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[1] The following MAP publications provide a detailed statement of the theoretical and/or educational principles that serve as the background and justification for this statement:

1. Mathemagenic Activities Program: Practical Guide for Teachers.
2. Principles of a Mathemagenic Activities Program.
3. Theoretical Base for Development of a Mathemagenic Activities Program for Early Childhood Education.

A variety of structured learning situations are designed to maximize individual decision-making and learning in small social groups. The goal of the program is to help each child understand his physical (Science) and social (Social Studies) environments through constructive interactions (both behavioral and symbolic) inherent in acquisition of language (Language Arts) and Mathematics. Art, Music, Health, and Physical Education are considered mathemagenic activities of equal importance in that each is used to reinforce and develop prior cognitive learning and skills, provide variation in the media for conceptual learning and to enhance personal development.

The recommended curriculum materials help make it possible for the teacher to set up a learning environment consistent with MAP principles which includes a) appropriate structuring of the child's physical and social environment and learning units that are slightly above his prior conceptual level (mismatch); b) self-regulation in that "learning territories" encourage instructional strategies that provide for appropriate variation in mode of learning and balance between highly structured and relatively low structured learning situations and between group and individual learning activities; c) learning tasks involving both behavioral and symbolic activity. In addition, the "interlocking" nature of the different curriculum contents (e.g.; overlap of Science, Art and Language) create possibilities for development of intellectual processes and skills through a variety of media, activities and social situations.

The Mathemagenic model requires significant changes in the teacher's role definition. Thorough acquaintance with the available technological aids (curriculum materials, various forms of media, etc.) and sensitivity to means for appropriate engineering of the MAP educational environment are necessary. Summer workshops and the in-service training program are designed to provide teachers with the necessary concepts and skills for implementing MAP and to broaden the decision-making roles of teachers.

The teacher is required to develop new skills and assume new responsibilities including: planning, supervision, and teaching of aides, evaluation of curriculum effectiveness, modifications of curriculum to meet individual child needs, understanding of individual children, School-Home continuity activities, and increased use of community resources for teaching.

The program Sponsor and staff are responsible for training of administrative (Project Director) and instructional leaders (Resource Teachers), teachers, aides, and other project staff and for the coordination and the monitoring of implementation procedures.

The Sponsor also maintains an evaluation program that is closely coordinated with the existing program of each community. Selected Achievement data along with various measures of cognitive development are regularly analyzed to examine the actual impact of the program on children.

B. Curriculum Process: The Mathemagenic Activities Program suggests a curriculum for grades K-3 which includes Language Arts, Math, Science, Social Studies, Art, Music, Health, and Physical Education. Except for Language Arts and Mathematics, no basal texts are used. Teacher's manuals are provided for each curriculum area with a sequential plan for presenting instructional units. The units are:

1. designed for small group instruction;
2. stated in terms of objectives with suggestions on how to accomplish the objectives;
3. activity oriented;
4. sequentially organized, building from simple to complex;
5. provided with procedures for developing an appropriate amount of structure for each task.
6. generally provided with a means of assessing whether the objectives are met.

While the units are structured and give suggestions on how to accomplish the stated objectives, teachers are encouraged, and sometimes required, to develop alternate means for meeting the objectives; i.e., teachers are not unduly restricted by the teaching manuals.

The Mathemagenic Activities Program is designed for small group instruction for the following reasons:

a) The teacher can better match the level of the learning tasks to each child's developmental level.
b) The child's physical and verbal activity can be appropriately guided.
c) Each child's attention to the task is more easily maintained.
d) Each child's knowledge, progress, and/or problems can be assessed more adequately.
e) The effectiveness of the instructional materials can be assessed more adequately.

The physical environment, however, must be arranged to allow for flexibility. Sometimes a minimum of three groups will be simultaneously engaged in different activities and will require separation so that they do not disturb others. At other times the teacher will want to call the total group together in a central location. In yet another situation, children will be engaged, individually, in pairs or in small groups, with learning materials and educational games which should be made available for unsupervised, independent activity.

The function of teacher aides in these settings would be to supervise one of the instructional groups, prepare and/or assemble materials and supplies for future lessons, and to help the teacher assess children's progress by giving him or her information about how easily and accurately the children perform certain tasks.

C. Sponsor Role. The MAP Model's delivery system has two important dimensions to consider: 1) the nature of the decision making processes characterizing the introduction and implementation of the Model; and 2) the specialized roles of our staff in the implementation of MAP.

1. A decision-making strategy, involving initial intensive negotiations (repeated each year) concerning specific guidelines relating to the instructional program with the Local Educational Authority (superintendents, principals, teachers, and parents) is essential to MAP.
2. Speciality staff roles of the model are:
   a) Program-Project Coordinator. The Project Advisor averages three to five days per month "on-site" during the first two

years and is primarily concerned with helping the community work out problems associated with implementation of MAP, including the coordination of preservice and in-service training.

b) The Mathemagenic Activities Program Specialists (classroom specialists, teacher-training specialists, evaluation specialists, etc.) spend between six and ten days per month "on-site" during the first year.

c) Curriculum Specialists in all substantive areas of the curriculum.

3. Educational materials and supplies: Curriculum material lists, including those available only from the Sponsor, are provided for each substantive area.

4. Planning: The University of Georgia MAP staff assist each community in planning and then writing their project proposals. The planning includes:

   a) assessment of community and educational resources;

   b) suggestion on staffing and personnel;

   c) list of the required curriculum materials, equipment and supplies;

   d) procedures for evaluation of the program impact on the children, teacher, parents, etc.

5. Preservice Workshop:

   a) The preservice workshop includes intensive study of curriculum materials, use of teaching aides and practice teaching. Second year teachers and aides are encouraged to lead several training activities. Each community makes plans to have small groups of appropriately aged children available for the workshop.

b) Curriculum development specialists (consultants), together with the MAP staff, present the rationale and demonstration of application of selected curriculum units.

c) Problems and principles of "engineering" the MAP learning environment and behavior management techniques are presented.

d) Each Follow Through classroom is visited by the Project Advisor and/or MAP curriculum specialist, the local Follow Through Director, Instructional Resource Teacher, to plan required changes for implementation of the MAP Program with the teacher-aide team.

e) Members of the PAC (if associated with the project) are invited to all sessions of the workshop and one evening meeting is held for all Follow Through parents. The local community is encouraged to take major responsibility for this program.

f) The University of Georgia staff holds a planning and review session with personnel responsible for each of the Follow Through components.

g) Teachers and aides receive initial training in use of projectors, video and other equipment.

h) Prior to the preservice workshop each project:

  i) selects and assigns teachers to grade and school;
  ii) selects and assigns aides to teachers;
  iii) identifies children for participation in the program;

    iv) encourages teachers, if possible, to visit a MAP Follow Through classroom; (Communities in their second year have teachers visit in the grade below which they will be teaching.)

    v) encourages new teachers, where possible, to visit a MAP Follow Through project.

    vi) is certain that all manuals, textbooks, and materials be available.

6. In-service Work: The major emphasis of our model is on classroom learning and behavior but we are firmly committed to all components of Follow Through. Thus, the Project Advisor will be concerned with the co-ordination of MAP with the Local Educational Authority and the special Project Director.

   The Project Advisor, MAP Specialists and the local Instructional Resource Teachers are responsible for the on-going in-service training for the teacher, aides, and/or others, including arrangements for supplementary training by consultants from the University of Georgia.

   All teachers and aides are expected to spend some time at school after the children leave. Teachers are often paid for this time spent in planning, evaluation, in-service work, home visits, preparation of teaching materials, etc.

7. Conferences: Two to three conferences are held at the University of Georgia! A fall meeting for Project Directors and one or two, mutually agreed upon, for Instructional Resource Teachers and/or other project staff.

8. Evaluation: As noted earlier, an essential component of the Mathemagenic Activities Program in each community is evaluation of the progress of project staffs in implementing MAP principles; especially the impact of teacher training on children's cognitive, social and emotional growth. Classroom observation procedures, in conjunction with selected measures of the children's cognitive abilities, academic achievement level, and socio-emotional competence, form the core of the evaluation program. Children's performance on one or more of these measures upon entry and exit from MAP, is a required minimum. These evaluation efforts, upon mutual agreement, are conducted either by the Local Educational authority and independent evaluation group, or are the shared responsibility of Sponsor and Project. Periodic oral and written evaluation reports are provided by the Sponsor and serve as one direct source of feedback.

II. COMMUNITY OBLIGATIONS

A. Community Follow Through Staff. The community project provides the following staff to implement the Sponsor's program:

1. Full time Director
2. Instructional Resource Teacher(s): one per seven-eight classrooms
3. Two aides per classroom: at least one paid aide is to be selected and, unless an effective volunteer program is worked out, both aides are to be paid

4. Non-instructional personnel should consist of:*

   a) a coordinator for parent involvement

   b) a social worker or school-home coordinator

   c) a nurse or health aide

   d) a team (about 1 to 100 children) of low income (parent) aides is to be associated with the non-instructional team. The non-instructional personnel will need to coordinate their efforts so as to meet their multiple responsibilities, thus, the responsibilities of these aides, therefore, vary in order that all Follow Through services are provided.

5. Evaluation coordinator: each community (is encouraged to) have on its staff a person (e.g.; psychologist or educational evaluator) responsible for coordinating the local evaluation efforts. The evaluation coordinator assists the Program Sponsor and Follow Through Director with the coordination of the evaluation program. Specifically, an evaluation coordinator:

   a) acquires, documents and distributes information as a service function for persons having use for the information in planning.

   b) serves as consultant and/or resource person to individuals and/or groups when his knowledge and skills may be of help to those persons.

   c) assumes responsibility for obtaining enough detailed information that relevant people have adequate information to meet their needs.

*If appropriate to consider as part of the MAP project.

d) performs certain functions (e.g., jobs) within the evaluation-monitoring area; functions that are assigned within the organizational structure.

e) coordinates various evaluation, monitoring, information-gathering efforts within the area to which he is assigned. This function is focused at the level of operations but it is appropriate for the evaluation coordinator to function at the level of planning if assigned those functions by the administration of the organization.

B. Instructional Specifications.

1. Class size: teacher-pupil ratio of 1 to 20 is ideal -- maximum permissible ratio 1 to 25. Each classroom of 25 children must have 2 teacher aides.

2. Room characteristics:
   a) carpeting
   b) room dividers
   c) adequate storage space
   d) multi-purpose tables and chairs

3. Sponsor recommended instructional materials available for each curriculum area.

4. Instructional equipment available to each classroom:
   a) record player
   b) film strip projector
   c) third grade classrooms have a carousel projector
   d) kindergartens have a minimal supply of "house keeping equipment" and large blocks for a "block center"

5. Instructional equipment available as needed:

   a) video taping equipment

   b) 16mm. projector

   c) tape recorder

   d) overhead projector

6. Central office equipment:

   a) copier

   b) mimeo equipment

C. Program Project Coordination. The Project Director conducts regularly scheduled staff meetings in which problems arising from implementation of the Sponsor's program is discussed (the Project Advisor should be present at most of these workshops).

The Project Advisor's role includes responsibilities for instructional supervision and co-ordination of the Sponsor's program with the total Community Follow Through Project. The local Educational Administration and Project Director provides the necessary support and facilities so this task can be accomplished.

D. Consultants. In addition to the MAP field staff and/or consultants, each community reserves funds for special consultants (e.g., speech, retarded, handicapped, etc.) where necessary to meet local community needs.

E. Conferences.

1. The community provides for selected staff and community leaders to attend two-three conferences of 3-5 days each at the University of Georgia as part of the continuing training, planning, and evaluation program of the Sponsor.

2. The Follow Through Project Director arranges appropriate conferences of local project staff, teachers, administrators, school board members, and community leaders as requested by the Sponsor.

F. Evaluation Specifications.

The project administers academic readiness tests in the Fall of the entry year to all MAP children. All MAP children are administered achievement tests in the Spring of the exit year and, depending on particular projects' needs, are administered Spring achievement tests in intervening grades and in selected post-MAP years. In addition selected comparison groups of children not in MAP are administered identical tests in concurrent years. The project cooperates with the sponsor in the administration of various instruments designed to provide detailed information regarding the fidelity with which the model is translated to classroom procedures, the levels of cognitive development of the children, and the development of their interpersonal relations.

PROGRAM DESCRIPTION

# of the

MATHEMAGENIC ACTIVITIES PROGRAM

FOLLOW THROUGH

University of Georgia[1]

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June, 1975

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[1] This Program Description was originally prepared at the suggestion of the National Follow Through Office, for the 1973-74 Continuation Proposal of the Mathemagenic Activities Program-Follow Through, University of Georgia.

The authors would like to express their appreciation to all those staff members who contributed to the production of this document. Please see Appendix A for a complete listing of Mathemagenic Activities Program staff members.

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Preface

The Mathemagenic Activities Program is one of twenty models for early childhood education that is part of the Follow Through planned variation experiments. The purposes of this nationally funded research program are: (1) to determine the effects of various classroom learning environments and health services on the academic achievement and intellectual development of children from low income families; (2) to broaden the decision base for education through more active participation of parents in many facets of school life.

The Mathemagenic Activities Program attempts to meet these broad objectives by employing leadership development in the Administration, Instruction, and Non-instructional components of each project. Evaluation of the effects of the program is the joint responsibility of the Project and Sponsor. The partnership of the local community, federal government and the external change agent (Sponsor) is a complex one, but MAP is committed to application of its change model to all aspects of its operations. This description of our program includes a statement of MAP's philosophical and theoretical basis for constructing both the Project Development and Classroom Learning Environments, the structure of our Delivery system, and of the Evaluation process. It is our firm hope that many communities will find the MAP Process Description useful in thinking about alternative approaches to solving some of their particular educational problems.

C. D. Smock, Director

PHILOSOPHICAL-THEORETICAL FOUNDATIONS OF MAP

The Mathemagenic Activities Program (MAP) is based on a commitment to the Follow Through comprehensive educational program. Two fundamental assumptions which were not necessarily characteristic of public school education in the past are embodied in the Follow Through program and in MAP. First, educational systems, as public institutions, are responsible for preparing children and citizens for the on-going inevitable changes in society; that is, an educational system should be a mechanism for change." Second, educational programs must be based on the psychological level of development of the child and the compatability of the school learning environment with the many "learning environments" he encounters outside of school.

A comprehensive educational program for children must include, therefore, the following:

1) appropriate educational decision-making strategies that insure adequate and timely needs assessment and resource allocations to meet the educational objectives of the community, parents, and children;

2) an explicit "renewal" strategy for continuing development of all professional educational staff;

3) an explicit theory of instruction with associated technology;

4) attention to the child's personal-social well being and experience in extra school environments (e.g., the home);

5) the physical health status of the child.

The Follow Through-MAP Project within a community, then, is conceived as a "miniature comprehensive school system" to provide a "model" for achieving these objectives.

Contemporary American society is characterized by and committed to economic and social interdependence, to innovation and change in both the technological and social sectors, and to the continuing expansion of opportunities for participation of all children in educational, vocational, political, and personal-social activities. These commitments require an increasingly complex set of skills, knowledge, and problem-solving abilities as well as an understanding of the relationship of one's self to society. The fact that approximately one-third of our children and adults have been excluded from these opportunities has been the stimulus for the tremendous increase in resources allocated to the alleviation of the contributing factors. The substantial evidence of wide ranging detrimental effects of poverty on lower socioeconomic families had led to an increased concern among scientists (psychologists and educators) as to the possibility of remediation and prevention of these problems.

Education generally has been characterized by three broad lines of philosophical and psychological thought. The maturational view contends that intrinsic physiological-biochemical processes are most important to intellectual development. Thus, the pedagogical environment should be designed to create a climate that takes into account the fixed nature of child development (Rosebud theory). In direct contrast, the empiricist-behavioristic tradition proposes that children learn through "mechanical mirroring" of environmental input. The acquisition of adult knowledge and social rules, according to this view, is best facilitated through direct tuition of such information (Hot-house theory). The third philosophical-psychological tradition is represented in those theories of child development which assume that cognitive, social, and affective development are products of the interaction (i.e., transactions) between the child and his environmental conditions (adaptation theory).

These varying views of child development have a long history in both the philosophy of education and the science of psychology. Many modern psychological theorists (e.g., Piaget) have adopted, in one form or another, the position which assumes that cognitive, social, and affective development are products of the interaction (i.e., transactions) between the child and his environmental conditions (adaptation theory). In other words, the child's interpretation of any task or learning situation is based on his capabilities for coordinating and transforming information input to "match" a schema, plan, or cognitive structure. The MAP Model for change, including both principles for Project Development and of Classroom Practices is most closely related to this philosophical-theoritical position. Specifically, MAP is based on the following assumptions:

1. Intellectual development moves through invariant stages of structural (coordinated mental actions) change which permits the child to cope (adapt) with increasingly complex physical and social "realities."
2. Optimal conditions for developmental-intellectual change (organization and reorganization of mental actions) require an appropriate discrepancy between previously acquired knowledge and environmental-task demands.
3. Knowledge acquisition is derived from coordinated practical (behavioral) *and* mental actions on elements of the physical and social environment.
4. Environmental-learning conditions should provide for *constructive* or personal regulation of practical and mental actions.

Scope of Work

The *MAP model* envisions the institutionalization of the MAP change process at all levels of the educational system. That is, the MAP principle of *developmental change* is assumed to apply equally to the child, the teacher, *and* to the Local Education Authority (LEA) and/or community social system. Thus, our intervention strategy is conceptualized as relevant to the installation, and maintenance, of the MAP model as sub-system within a community. Initial interventions are focused on the development of an organizational structure (project components), process (guidelines for information exchange and decision making within the project organization) and training staff both for leadership roles and for implementation of each component of the model.

The MAP-Project model has the following functional components:

1) Administrative: program development (organization, information distribution, decision making processes policy and planning), project staff training (initiation and renewal) strategies and procedures, coordination between Project, Policy Advisory Committee (PAC), LEA, and Sponsor.

2) Instructional: classroom learning environment and school-home continuity program.

3) Noninstructional: comprehensive services (medical, dental, etc).

4) Evaluation: acquisition of information for decision making, formative evaluation of program progress, quality control and dissemination.

Theoretical and practical considerations require a strategy that emphasizes sequential implementation of these components. The MAP Follow Through program initially focuses in-service training activities directly on the classroom learning environment (i.e., teacher and aide training). The second stage emphasizes training of leadership personnel for each of the four components but with special efforts devoted to the administrative (Director) and instructional (Resource Teacher) components. Leadership training is provided through construction of "learning situations" for project staff, consultation by Sponsor staff as problems arise in the job situation, conferences and workshops at the University, participation in leadership roles during MAP in-service training programs and on-site guidance from Sponsor staff (especially the Project Advisor and MAP Specialist) in each functional component.

Long Range Objectives

1. Broaden project decision making base for education of children
2. Implement MAP Classroom Learning Environment

3. Attain increased continuity of School and Home Environment

4. Provide necessary training and experience so that all (or some) components of the change model are established as an integral part of the LEA (i.e., institutionalization of MAP)

Short-term objectives

Short term objectives of MAP depend upon available community resources and the stage of project development (i.e., degree of implementation of each MAP component). Specifically, objectives for each year of a project are generated to insure progress in each of the following:

Administration (Project)

1) To develop an information distribution and decision making process system that includes all stakeholders (including parents) in educational decision making.

2) To bring the project organization to a point where relevant staff leadership personnel are participating in training of FT and NFT staff to maintain the MAP Follow Through program.

3) To provide guidelines and training of Follow Through staff (including principals, teachers, and community professionals, etc.) necessary to develop an effective and appropriate role for the Policy Advisory Committee.

4) To bring the project organization to a point where information exchange between the Project, Local Educational Authority and other community institutions is adequate to provide for the maintenance and/or expansion of MAP-FT within the LEA.

Instructional component (Project)

1) To train instructional leaders (i.e., resource teachers) to a point where they:
    a) are able to judge the fidelity of MAP classroom implementation
    b) are able to generate on-going in-service training activities for teachers and aides that will increase the fidelity of implementation of the MAP classroom learning environment program.
    c) are able to participate in training programs necessary to develop effective

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PAC, School-Home Continuity and Evaluation components.

Noninstructional component (Project)

1) Assist projects in organizing and training staff to implement the comprehensive services components.

2) To conduct training workshops for project staff and parents to promote increased parent participation and involvement.

Evaluation component (Project)

1) To train local staff in the evaluation process to the point they are able to efficiently and effectively collect and make maximum use of information needed by project staff (especially the Project Director), LEA, and Sponsor for decision making and dissemination.

2) To train project staff (including teachers, aides, and parents) in the issues and procedures necessary for understanding and utilizing the evaluation process.

3) To assist local sites in developing an evaluation system that meets the needs of the LEA, teachers and parents.

4) To evaluate the implementation of the MAP program, including monitoring of project activities toward meeting selected implementation objectives, and to provide information on MAP effectiveness.

Classroom Learning Environment

The MAP program provides preservice and in-service workshops for training teachers and aides in the implementation of the MAP program process. The MAP teacher is the "engineer" responsible for constructing the classroom learning environment that provides children with opportunities for specific (e.g., reading, math, etc.) as well as general (e.g., social competence) learning.

Training plans for Resource Teachers are designed to provide teachers and principals with a resource person who can facilitate the effectiveness of implementation as well as provide instructional and diagnostic services.

The Resource Teacher also provides liasion between the Sponsor and the Project, and explores ways to adapt individual teacher styles to match MAP's ideal Classroom Learning Environment.

A major objective of the Mathemagenic Activities Program (MAP) is to facilitate children developing an understanding of their physical and social world and to develop confidence in their problem-solving skills. The MAP is based on theory and research which suggests that basic intellectual capabilities of an individual are rooted in coordinated action--sensorimotor to internalized mental action--as the child develops. Intelligence, then, involves actions--thought and cognitive actions are synonymous. To facilitate intellectual development, specific learning situations must provide a balance of the two basic learning processes; application of existing intellectual operations (reasoning) to new situations (assimilation) and acquisition of ideas and/or skills from "copying" how others (e.g., peers, teachers) solve problems (accommodation). Thus, MAP proposes three principles necessary for creating a learning environment that promotes knowledge acquisition: Mismatch, Activity and Personal Regulation.

An appropriate Mismatch exists only when a learning situation contains a degree of congruence with what the child has already learned and a degree of incongruence or novelty. The resulting intellectual "conflict" motivates the child toward reexamination of his ideas and understanding of the situation. When concepts are unstable, they do not serve as a foundation to generate higher-order concepts; however, when new concepts are incorporated and integrated with those previously acquired, the learning is functional and stable. For this reason, the learning environment must provide a variety of tasks and activities to encourage the child to test new ideas in new contexts and to consolidate his recent learning as well.

Coordinated actions are essential to knowledge acquisition (learning). As the child encounters objects of the physical and "social" worlds, coordinated actions provide the basis for discovering and abstracting the invariant properties of objects, and relation between actions on objects and consequences (i.e., means-ends relationships). Expansion of the child's natural curiosity tendencies requires confrontation with a variety of relatively new situations, tasks and problems. The stimulation of exploratory behavior, and the consequent mental and practical activity, also facilitates on-going intellectual growth in the many extra-classroom situations (home and community) in which the child finds himself.

It is indicated above--but crucial to point out--that "activity" does not only imply mere physical action. Physicalencounters must be accompanied by intellectual (mental) action, including "gestation" time and reconstruction; i.e., the learner must have the opportunity both to effectively organize new ideas and to utilize this information or ideas in new situations.

Personal (self) regulation of learning, to some degree, is an essential aspect of all learning. That is, learning always occurs with reference to the intellectually coherent and functional frame work of the individual's prior experience. Personal regulation is possible only when appropriate number and types of options are consistently available to the child. *Appropriateness* of options is dependent upon one's already existing knowledge structures. Thus, variation in the developmental *levels of tasks* and *modalities for learning*, in addition to *choice of task*, are necessary to meet the needs of all children in the classroom.

Cognitive, social and affective processes are inseparable and reciprocal aspects of the developing individual. One of the major strategies used by the child--if he is permitted--is to test out his perceptions and ideas with peers. Social interaction is essential for the organization, reorganization and stabilization of newly acquired knowledge. As the child develops intellectual understanding of his environmental and social encounters, he constructs and orders his attitudes (about self and others) and values (what is "right" for himself and people in general). Through the exchange of ideas with others, and the resolution of differences of opinion, the children learn to coordinate different points of view and are forced beyond the early forms of egocentricism. Social collaboration between peers and between child and teacher is, then, a necessary ingredient of cognitive as well as affective growth.

Classroom Setting

In many respects, the above implies each MAP classroom is as unique as the teacher and the individual children. However, identifiable constant elements characterize the classroom designed to be consistent with the MAP principles and philosophy.

The teacher seeks to develop the general intelligence of the students by providing a variety of relevant learning opportunities that enable the individual to organize and deal with new situations. The acquisition of general knowledge and understandings leads the child beyond mere recall of specific facts--and is of major importance in the MAP classroom. Teachers, therefore, provide various encounter situations for the child to act upon objects and ideas in an atmosphere with relatively high freedom of movement. In fact, the "visible" positive support of teachers and peers is necessary if the child is to examine and choose alternatives without fear of being embarrassed or labeled a failure if he does not initially succeed.

During the course of a mathemagenic day, (or week) the child will encounter opportunities to expand his concepts and skills relevant to increasing his understanding of the physical (science), social-personal (social science, art, and music) and symbolic worlds (math and language) in specially sequenced and structured "activites" (instructional units). The MAP principles require learning settings that rely, as much as possible, on the child's intrinsic motivation to seek and solve problems. The teacher plans a modifiable schedule of learning or encounter situations, with some options, to encourage the child to seek and solve problems appropriate for him. By utilizing knowledge of the learner's level of development and needs, the teacher, as a professional, always provides "structure" of varying degrees. Many activities are teacher-chosen so that the student acquires certain specific skills and concepts. However, alternative situations should be available from which the child may choose to engage in the acquisition of the relevant skills or concepts.

The social structure of the MAP classroom (four or more small learning groups with 2-3 adults) promotes social interactions and "individualized" attention. However, the teacher, as a "social engineer," may periodically interact with the total group when information and/or concepts concern an entire class. This situation allows all children to hear and consider without the threat of being embarrassed. In doing this the child expands his interpersonal and cognitive competencies.

Implementation of MAP principles requires that teachers acquire new knowledge about the nature of intellectual and social development of children. The diagnosis and prescription of conceptual and practical activities for appropriate mismatch and the structuring of these activities (Coordinated Actions) to provide appropriate number, types, and timing of options (Self regulation) are skills which generally are new to our untrained teachers. The development of the necessary knowledge, MAP strategy and techniques is the objective of the intensive summer in-service, as well as regular (about monthly) in-service training offered by the MAP staff.

The MAP program tries to operate with the same general change principles for teacher training as those we expect the teacher to understand and use to construct her classroom learning environment. Appropriate constraints on classroom structures and process are provided, however. For example, we sequence the number and types of options for the teacher in moving from a "content" to a "process" orientation. Further, restrictions on the social structure of the classroom (a minimum of four small instructional groups with two aides), and sequenced instructional units (provided in manuals and/or textbook) are beginning points for the teacher to move away from her "traditional" instructional strategy. As the teacher establishes competence at this level, options for modification of classroom structure, nature of activities, and role of instructional aides are introduced through in-service training.

Instructional Material Required by Sponsor

The MAP is a process oriented instructional program. There is considerable emphasis on the sequencing of activities that promote concept learning with materials (games, etc.) which "demand" and/or "support" acquisition of particular cognitive skills and concepts. The recommended materials are those our staff have found to be most helpful for training teachers and aides in the MAP approach, and, at the same time suitable for child learning.

The chart on the following page summarizes the cost of Sponsor-recommended materials.

MATHEMAGENIC ACTIVITIES PROGRAM

COST PER CLASSROOM[1]

	Kindergarden		First Grade		Second Grade		Third Grade		TOTALS	
	1st Yr.	Suc. Yrs.	1st Yr.	Suc. Yrs.	1st Yr.	Suc. Yrs.	1st. Yr.	Suc. Yrs.	1st. Yr.	Suc. Yrs.
Art	150.00	100.00	175.00	100.00	175.00	100.00	210.00	135.00	710.00	435.00
Language Arts	100.00	25.00	235.00	100.00	500.00	115.00	540.00	115.00	1,375.00	355.00
Math.[2]	74.00	30.00	145.00	20.00	130.00	20.00	135.00	20.00	484.00	90.00
Music	125.00	10.00	125.00	15.00	135.00	15.00	170.00	15.00	555.00	55.00
Physical Educ.	125.00	10.00	125.00	25.00	125.00	25.00	100.00	25.00	475.00	85.00
Science	45.00	25.00	160.00	40.00	240.00	50.00	270.00	50.00	715.00	165.00
Social Studies	70.00	25.00	160.00	50.00	160.00	50.00	120.00	50.00	510.00	175.00
Health	—	—	105.00	30.00	--	—	105.00	30.00	210.00	60.00
TOTALS (25 per class)	689.00	225.00	1,230.00	380.00	1,465.00	375.00	1,650.00	440.00	5,034.00	1,420.00
Per Pupil	28.00	9.00	49.00	15.00	59.00	15.00	66.00	18.00	50.00	14.00

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[1] The stated costs are maximum; i.e., assumes the community has no relevant curriculum materials, books and equipment.

[2] Workbooks not included.

Parent Participation and Involvement

The MAP approach to early childhood intervention focuses on the classroom as the primary unit of change. Applied first to the school learning environment, the principles of change are then utilized to develop the other project components, including the Policy Advisory Committee, the Local Education Administration, and the community. The common factor in each of these interlocking facets of the educational system, aside from the change process itself, is the necessity for parent involvement; the necessity derives from a conviction that parents are needed for the program to persist and that parents have the right to participation in programs concerning their children. The rational and nature of parent involvement and participation in the Mathemagenic Activities Program are described below.

Rationale for Parental Involvement: All programs should be accountable to the people they serve. Follow Through programs should be a model for responding to the needs of parents and children as these relate to educational-societal goals. All stakeholders are to have a respected voice in the nature and direction of change. Without such participation, programs may wander in the direction of those who share little, if any, commonalities with their constituents.

Parents in the classrooms, cafeterias, and libraries, as participants in educational courses and as reinforcers for classroom activities, all contribute to better learning environments for children and promote communication between the school and the community, adults, and children, poor and non-poor.

Aside from valuable information and ideas the school system receives from such interaction, adults have common interests with their children. Pride in their parents' work often motivates children to take a greater interest in school--or in their parents. Increased communication also strengthens the possibility that a better understanding of problems will occur, regardless to which institution they belong--family or school. Such a recognition of the realities of existence, perhaps, will restore the public's confidence in its educational systems and encourage it to work hand in hand with the administrators.

Within the Sponsor's concept for change, there is no place for specifying in detail a program for parent involvement, and no mandate to begin with a particular emphasis, as long as the Follow Through guidelines for PAC and Parent Involvement are accepted and a beginning made. These decisions are left to the individual projects; the Sponsor has staff members available on request for guidance and workshops, and helps project staff keep informed about relevant legislation and published materials.

The intent of the MAP parent program is to assist the project personnel in learning to utilize available resources, to assess the needs of the project and the community, and to develop their programs to meet those needs. Therefore, we do not publish "parent workshop" booklets or pamphlets on how to organize volunteer programs - we do monitor activities and may recommend schedules for implementing aspects of the programs for parents. And, the project staff are provided help on use of available materials and how to generate training activities that promote a variety of appropriate and realistic parent activities.

A. Policy Advisory Committee: The MAP Follow Through Policy Advisory Committees have undergone various changes in their structures and functions during the past years. Progress is evident in that PAC's are systematically undertaking tasks and responsibilities relevant to guiding the operations of the local Follow Through programs. Each year most of the MAP projects have PAC's with increasingly appropriate organizational structure and committees assigned to concentrate on particular aspects of the total program (e.g., Personnel, Evaluation, etc.).

The MAP program emphasizes the responsibility of the Project Director for development of an effective PAC. The long range objective of MAP is that the PAC will become an effective partner of the Board of Education and Superintendent of Schools. Such a group of knowledgeable parents and community agency representatives can be supportive to a program director, a principal, and/or a total school system.

The basic purpose of a PAC is to reopen the channels of communication between parents and school administrators, between poor and non-poor, and between professionals and non-professionals, and to provide parents and citizens relevant information and roles necessary to participate in broadening the decision-making basis of education.

The process is not easy. Some people fail to realize the necessity for, and the value of, parent participation in a Policy Advisory Group. Also, many parents, and many community agencies, have had little interest in, and knowledge about, education. For this reason, MAP has found it necessary to take a positive role in the training of PAC's. In the spring of 1972 a booklet entitled "MAP Sample By-Laws for a Policy Advisory Committee" was produced by MAP which sets forth the philosophy of MAP and an "ideal structure" for the PAC. MAP staff members participate in in-service training for the PAC, locate "outside" consultants for help in the development of the PAC, and assist in the development of more effective PAC operations.

B. School-Home Continuity: Increased continuity of school and home environment is one of the basic long term objectives of MAP. Research Teachers assume a leadership role in the planning of school-home continuity efforts. They are responsible for assisting the teachers in generating realistic, desirable plans designed not only to involve parents in the school setting but also help parents provide a better home learning environment for their children. The accomplishment of this objective requires strategies that strengthen ties between the teacher and parent (school-home) but do not overburden the classroom teacher.

Initially, the emphasis is on providing parents experience with the activities and tasks that are part of the instructional process for their children. Subsequently, parents are given training in the utilization of physical and social resources readily available to them in the home environment, that will stimulate learning (e.g., verbal interaction). Parents will not be trained as "teachers"; i.e., MAP does not believe in a "school at home."

Parents also are involved in workshops centered on helping children develop positive self-concepts, family problem solving, providing for independent activities for children, and ways of promoting children's curiosity. It is this program which will tie all other parent participation together to create a strong "parent component" for a Follow Through model that focuses on school learning.

Resource Teachers and teachers, with guidance from the Sponsor Staff encourage and provide support for each principal to develop school-wide School-Home Continuity programs.

C. Home Visits: The MAP year begins with the Parent Coordinator (and/or aides) or Social Service staff making home visits. A primary concern of MAP is that ample opportunity be available to parents to learn about the program, share their ideas, and to utilize the talents of the project's staff members. Parent Involvement and/or Social Service staff try to visit each "comprehensive" family at least once prior to Christmas and again before the school year ends. They are on call for emergency visitation or to engage parents in special activities.

Teachers are encouraged to visit the homes of their students. School-home visits, for example, may be substituted for report cards or for solving certain problems the child is having at school or to supply needed information to the teacher.

D. Materials and Craft Workshops: At the beginning of each school year parents are invited to make materials for the classrooms. Many items can be made for less than the cost of commercial objects, and there is no delivery delay. When parents make the instructional materials and decorations there is much pride invested by everyone--and such items have more "attraction" value to the children.

Craft workshops are an early outgrowth of the MAP's classroom materials workshops. Once the classrooms had been supplied, workshop leaders followed the parents' indicated interest in continuing to create things for classrooms, in making decorations for their homes, and in learning other crafts. The parent coordinators responded well and continued to do what they know best--creating necessary objects of interest from odds and ends. However, that very "secruity" of the leaders may create difficulties and training is necessary to help them broaden their horizons to meet the parents' needs.

E. Volunteer Program: Classroom Volunteers: Most volunteers in MAP projects work in classrooms. Although other jobs should be made available, projects often focus on the classroom programs. The Sponsor is interested in whether or not the volunteers are appropriately utilized, like their jobs, and feel useful. Further, it is as difficult for many teachers to have volunteers as it is for parents to adjust to being in the classrooms. Therefore, Resource Teachers, Parent Coordinators and/or Social Service staff must work closely together to orient and train all participants in the program.

Evidence of pride in accomplishments and increase in self-confidence of individual parents has been charted from the beginning of a school year to its end. Children also respond positively, indicating pride to have their parents take an interest in school (and directly, in them) and show others what they can do.

F. Volunteer Program: Health Volunteers: One basic aim of the health program is to involve parents as much as possible in all services offered by Follow Through. There is a need to familiarize parents with available health resources and to educate them how to use those resources. As in other parts of the program, parents have been essential for familiarizing other parents with the goals of the project and, specifically, the medical-dental component.

Parents also are utilized to facilitate early completion of eye tests and height-weight measurements, to substitute for parents who cannot accompany their children to doctors' appointments, and to assist in obtaining medical permission slips. These activities assist the projects in meeting the National Guidelines of the Follow Through health component, which is regularly monitoried through oral and written reports to the Sponsor. Completion of these tasks as soon as possible after the beginning of school maximizes the effects of the health services.

G. Career Development: MAP encourages participation in any activity that enhances parents' self-concepts of job performance. MAP in-service training and academic courses (for credit or not) are required of all aides, though work toward a degree is not a primary aim. However, in helping the aides plan for their career aspirations, the necessity of a high school diploma or G.E.D. is emphasized. Priority for non-degreed employees is placed on G.E.D. courses. A Career Development Committee chaired by a PAC member, to work with the Project Director, is recommended by MAP. With input from the aides, this committee (at least one teaching aide, a teacher, and a resource teacher) can select a course either for credit or not. Special attempts are made to obtain local, state, and federal funds for classes arranged through a local institution of higher learning, or other convenient resources.

It should be mentioned that other than low-income parents are encouraged to participate in the MAP projects. It is recognized that many people other than teachers can enhance the learning environment. Efforts are made to involve older students, service organizations and all interested individuals. We especially encourage projects to engage the elderly more frequently in the task of furthering public education.

H. Educational Seminars: This aspect of parent involvement may be a separate program or an integral part of other components depending on the contest. The intent is that the Follow Through personnel know, first of all, what is of interest to parents and, secondly, what educational opportunities will most help parents in their daily lives. At this point in the development of MAP projects, professional help is required to train paraprofessionals to more effectively accomplish these goals.

All projects regularly utilize the talents of home economists, decorators, medical personnel, etc. Lecture sessions usually are interspersed with the craft workshops. The Sponsor advocates an "educational" program for parents on a regular basis. It is desirable that parent participants become more knowledgeable about available adult education programs and with opportunities to further their educational, economic, and social status.

I. Paid Personnel: The physical and social structure of the MAP classrooms includes a provision for the involvement of Follow Through parents in MAP. A teacher and two aides work with children in small groups. Follow Through low-income parents are given priority for a large proportion of these paraprofessional positions.

DELIVERY SYSTEM

The structure and operations of the MAP delivery system is designed to be consistent with the MAP change model and the long range objective of institutionalizing the MAP "change process" in each community.

During the initial phases of project development a MAP change agent (Project Advisor) is utilized to structure a "learning environment" consistent with MAP principles for project staff leadership. The Advisor serves as the Coordinator between the MAP Sponsor and community project staff. Special emphasis is placed on working with the Project Director to develop decision-making strategies that assign appropriate input and decision making responsibilities to the various stakeholders in Follow Through, and to develop alternative courses of action necessary to implement the MAP-Follow Through model in the context of local conditions, including the developmental stage of the project and level of staff experience.

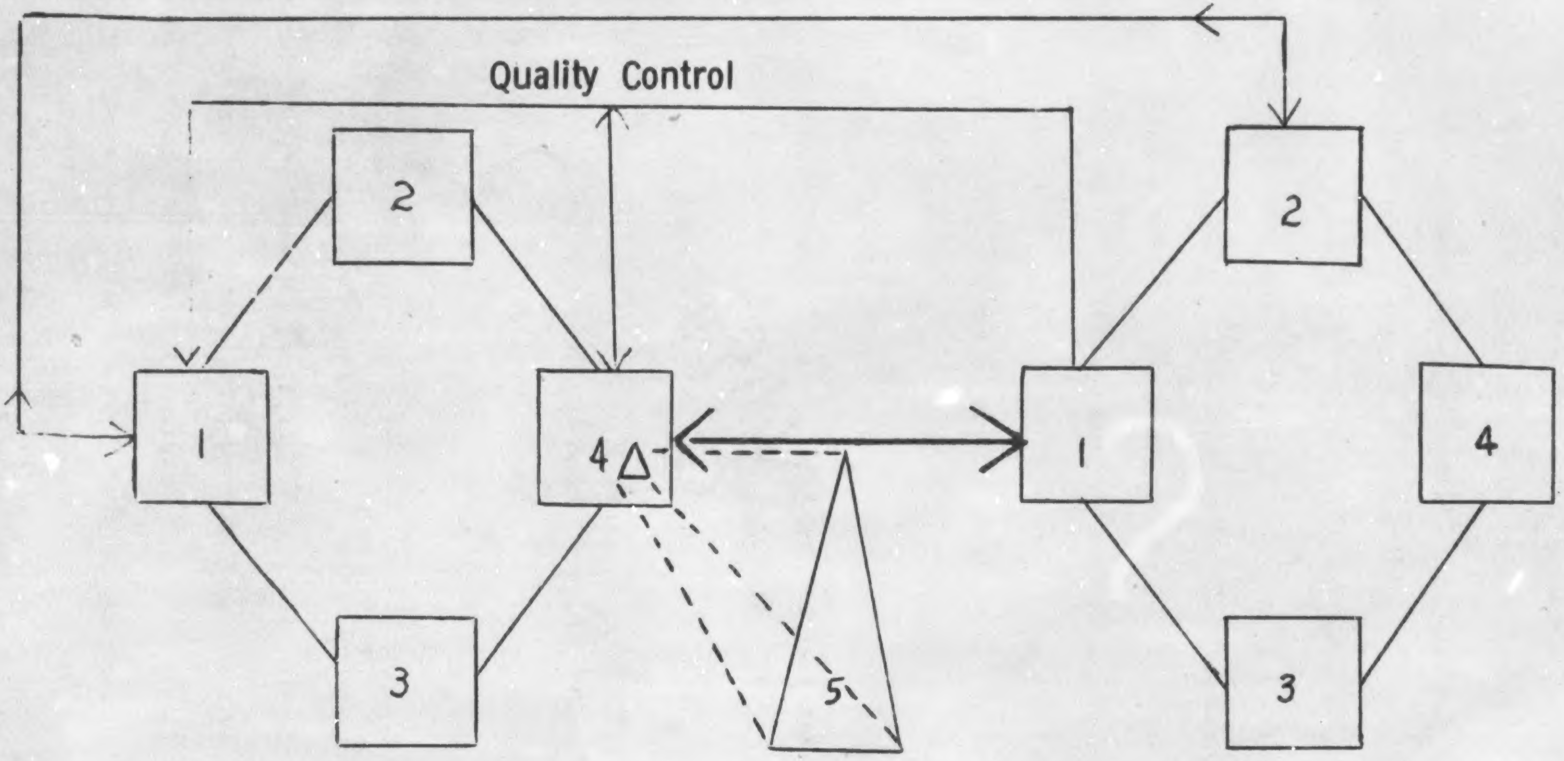
As a Project Director acquires the necessary knowledge of MAP principles and leadership skills, his (or her) role is extended to replace the MAP Project Advisor. The Field Operations Coordinator for MAP and the Project Director then jointly develop strategies to invest more decision-making responsibilities in the various community stakeholders in the Follow Through program. The ultimate goal of this process is to develop local independence for evaluation of alternative courses of action necessary to implement the MAP model in the context of local conditions, including the developmental stage of the project.

The Project Advisor role function is that of coordinating the MAP model development activities with the local community. A Project Advisor is responsible for planning with the Director for inservice activities necessary to maintain and/or increase the fidelity of implementation of the sponsor's program and for monitoring of all MAP Project components. The MAP Project advisor and Project Director work with superintendents, Boards of Education, and principals to achieve implementation of the suggested organizational structure and processes in order to facilitate a positive impact of the model on the local system as a whole.

The Project Advisor (and later the Field Operations Coordinator), then, is the major communication link between the Sponsor and Projects. The "double-diamond" representation of the Follow Through communication system demonstrates this more clearly. Communications take place through both on-site and by letter and/or telephone contact.

MATHEMAGENIC ACTIVITIES PROGRAM

Double Diamond Delivery System



MAP ORGANIZATION

1. Policy and Planning
2. Program Development
3. Evaluation
4. Field Operations
5. Program - Project Coordination

COMMUNITY ORGANIZATION

1. Program Development
2. Policy and Planning
3. Evaluation
4. Implementation

Training Strategies

The MAP program emphasizes the development of a cadre of leaders in each project for each of the model's four components. The MAP-Project Advisor together with the Project Director and relevant MAP staff, are responsible for planning in-service training and on-the-job "tasks" appropriate to the level of development of the project staff leaders as well as staff members responsible for implementing the program (teachers, aides, principals, parent coordinators, etc.). Whenever possible, inservice training is designed to serve this dual purpose; i.e., leadership staff development and program implementation.

All summer, and on-going, in-service activities are planned jointly with project staff leaders of each program component. A MAP Specialist for each component (Instruction, Administration, Non-Instructional, Evaluation) is available to conduct necessary workshops or training and demonstration sessions. Generally, in addition to the Advisor activities with the Administration Component, 4-6 days per month of inservice is necessary to maximize implementation of the MAP Instructional Component and to insure adequate development of the Noninstructional and Evaluation Components.

In addition to the on-site training, workshops, paid for by MAP, are conducted at the University of Georgia (approximately one each quarter) for the purposes of planning and/or for training project staff leaders. Further, project staff are encouraged, and staff leaders are required, to plan and conduct inservices for their own staff.

Monitoring Procedures (Quality Control System)

Fidelity of implementation of the MAP model components is judged by MAP Specialists during on-site visits. Critical elements of the operations of each component, in some cases derived from intentional observations set by the MAP leadership (e.g., Classroom Observation Checklist) are recorded and used in the on-going planning for project development, including project continuation applications. The MAP Program-Project Progress Chart is used at the end of the year to obtain a rating of progress.

Objective monitoring procedures also are used, where possible, for determining implementation of the comprehensive service (Non-Instructional Component) program. Projects send the Sponsor detailed information on activities and services offered by the Noninstructional staff every three months (e.g., the number of children receiving medical services, number of parent activity sessions, number of home visits, etc.). This information is used as indication of project progress and for planning in-services.

On-site in-service activities are planned to give MAP staff members an opportunity to observe each classroom. In addition, a systematic observational procedure (C.O.I.) has been developed to obtain objective information on implementation of the MAP classroom learning program.

Finally, the MAP internal communication system provides a wealth of information relevant both to monitoring and evaluation of the Project Development process. A communication log book is maintained for each project. All letters, telephone calls and documentation of on-site visits are entered. For example, Resource Teachers planning and conducting an in-service training or a Director's planning for PAC involvement in decision making might be used as indicators or progress toward project "autonomy." These data also are useful in MAP planning for on-going project development activities.

Research and Development Activities

The following types of development and research activities are directly related to the Project Development Process. The nature of the activities varies, of course, with the stage of project development and community needs and resources.

1. Modification of Instructional Material.

   Whenever possible instructional material available in the community is modified to "fit" the MAP learning environment.

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MAP produced material is subject to on-going revision as need is indicated by teachers and/or evaluation data and resources are available.

2. New Classroom Techniques and/or Instructional Units.

MAP is continuing to explore and field test new instructional procedures designed to: 1) facilitate the children's concept learning, and 2) facilitate the teacher's understanding of the nature of child thought and intellectual development. For example, a new unit utilizing photography is being field tested. Teachers are encouraged to try out new techniques on their own--the only restriction is that MAP staff be informed and participate in the planning for the innovation.

3. Training Strategy and Procedures.

Training for project staff varies with the state of development of the relevant component (Instructional, Noninstructional, Evaluation, Administrative) and experience of the staff with the MAP program. Projects that are well advanced in the instructional component, for example, conduct training sessions and demonstrations designed to "proliferate" MAP to non-Follow Through classrooms (including 4th grade). MAP staff work with the project to develop the plans and strategy for such training.

4. Information Distribution and Dissemination.

MAP, through its newsletter, field staff, and special publications distributes information of general interest to Follow Through participants and MAP projects in particular. A movie describing MAP Follow Through (in "slide show" form as well) and video tapes of various aspects of the program are made available to MAP projects on request. In addition, the Evaluation section of MAP produces publications of findings in a form suitable for distribution to educators, parents and teachers.

5. Evaluation Program

MAP conducts an on-going evaluation program that can be expanded to include information needs of the projects. Cooperative evaluation efforts are encouraged where project and sponsor funds and personnel resources permit.

Instruments developed to assess program-project progress, degree of fidelity of implementation of the MAP instructional program, and impact of MAP on the achievement level of children (relative to other MAP projects) will be made available to a project as the R & D phase of each Follow Through project is completed.

(A detailed description of the MAP evaluation component is contained in the following section)

6. Workshops and Conferences

MAP usually hosts a workshop/conference at the University each year for each MAP Follow Through component (sometimes components are combined; e.g., Directors and Evaluation Coordinators). These conferences are designed to assess project needs, generate plans for MAP staff and Project staff in-service objectives, and to introduce new training procedures, etc.

7. At periodic intervals MAP disseminates oral and/or written reports of progress in the selected components for each project including impact of MAP on achievement and cognitive learning data. In addition, projects receive Project reports based on 3 years of the MAP Follow Through intervention program.

EVALUATION

The evaluation program of MAP is organized around three interrelated goals of evaluation for project development: (1) to assist in formulating questions specific to the projects and information needed (planning); (2) to develop a process for collecting information necessary to on going program implementation (monitoring); and (3) to prepare the obtained information for the purpose of decision making (appraising).

The *planning* activities involve the assessment of needs of the components, development of outcome objectives, and the statement of an overall evaluation plan. The *monitoring* activities involve formulating and implementing a data collection process which will be appropriate for making periodic assessments and will allow for relating the data to the outcomes. *Appraising* activities include editing and analyzing collected data, reporting, and assisting in interpretation of results to the community. Basically, the purpose behind the evaluation activities is that of providing a description of MAP involvement in the schools and of the observed outcomes. All of these activities involve administrative, instructional and evaluational personnel at both the Sponsor and Project level.

Reasons for including an evaluation component in the MAP Program are several, but most important is the recognition that an evaluation program can yield information useful for modifying and improving our delivery system and for facilitating implementation of the model instructional and noninstructional components in the Project. Furthermore, evaluation activities can: (1) provide information for all concerned (e.g.; parents, LEA, etc.) about the impact of the program; and (2) contribute basic knowledge concerning factors that influence learning and adjustment of young children; and (3) help assess the most effective ways of implementing change in community educational programs. More specifically, information derived from the evaluation program should be helpful to: (1) local project personnel--teachers, parents and, perhaps, chldren themselves; (2) the local project administration; (3) the MAP Sponsor; and

(4) the funding agency--Office of Education (OE). Evaluation reports should provide information on which decisions at these various levels may be based.

While several MAP staff are involved in some ways in the evaluation activities, the local project staff member often assist in initiating and implementing the planning, monitoring and appraising activities. Communities are encouraged to employ a psychologist or educational evaluator responsible for local evaluation efforts. Since various evaluation activities are initiated at both the local and sponsor levels, the sponsor provides consulting services for local data collection and analysis as well as conducts research with the assistance of local personnel. In implementing these roles, MAP employs an Evaluation Coordinator who is responsible for planning, data collection, data analysis and for supervising the writing of reports. Local and Sponsor activities are coordinated on a day-to-day basis by an Evaluation Field Supervisor also employed by the sponsor.

Basic Design

A general assessment of the operations and accomplishments of each project is conducted annually. This assessment consists of Sponsor staff judgments on the level of implementation of the Follow Through program across all components, including Sponsor program-project coordination, project administration, instruction, comprehensive services and evaluation. Special attention is given to the role of project directors and teacher supervisors as agents for educational change in the community, and to their relationship both to other local school administrators and to Sponsor personnel. Further, project staff training and personnel resources are assessed, along with the extent to which the Sponsor model for educational change is bringing about the agreed upon effects on the local educational community. To complete the assessment, information is obtained for describing the degree to which the local projects are involved in the offering of auxiliary services--social, psychological, medical and dental, nutrition--to parents and children. A rating scale developed for these purposes is described in the next section.

The total evaluation process, of course, is committed to descriptions and/or characterizations beyond the general assessment mentioned above. One set of necessary data pertains to the types of individuals or groups of individuals involved in and/or affected by the program (e.g., age, sex, cultural background, educational experience, attitude, skills, abilities, etc.). Also, description of the environmental context in which these individuals or groups function (e.g., the home, classroom, school, project, school system, community, etc.) as well as community and school attitudes and values, school organization and structure, etc. is essential. The types of activities and services that define the Follow Through program, and the characteristics of individuals and projects after being a part of the MAP program for a specified period of time, complete the descriptive information necessary to evaluate the various impacts of the MAP program in a particular community.

A major focus of the MAP evaluation design is on the local project's instructional component. Indirectly related to the classroom instruction is the training of local educators--superintendents, principals, teachers, and others--for appropriate understanding and utilization of the process of evaluation. Specifically, the training is oriented toward development of evaluation objectives, data collection instruments (e.g., standardized *vs* nonstandardized) and interpretation of the obtained information. The appraisal of this aspect of each project is contained in the general assessment procedures discussed earlier in this section.

Evaluation of the instructional component in each project is focused on four general questions: (1) MAP program maturity; i.e., changes in teacher effectiveness as the project develops over a three-year period; (2) effects of specific entering characteristics of the child on his subsequent intellectual, social and emotional development in MAP; (3) comparison of Follow Through (FT) children with Non-Follow Through (NFT) children on achievement and intellectual-social growth; and (4) the "latent" or post Follow Through effects on the child's subsequent learning abilities in the 4th and 5th grades.

The first concern deals with the impact of the MAP instructional model on FT children relative to the MAP-FT experience of their teachers, and relative to the time these children have been exposed to the MAP-FT program. That is, performances of groups of children of a given age who are taught by teachers with varying numbers of years of experience in the MAP-FT program are compared.

The second concern deals with the effects of varied pre-school experiences on the performance of MAP-FT children, and with the comparison of performances of MAP-FT children from low income families to MAP-FT children from non-low income families. The first question of interest, of course, is, "How do MAP-FT children who were in a Head Start program perform relative to MAP-FT children who had no such preschool experience?"

The third item is concerned with the effects of the MAP-FT classroom learning program on the major dimensions of the child's development; i.e., intellectual, social and emotional growth.

Finally, the study of the child's academic achievement and general development after the Follow Through experience is necessary if we are to fully evaluate the program impact. For example, during the first three years the Follow Through children may lag in specific academic skills but presumably are learning to be problem-solvers. Thus, many beneficial effects of MAP are not expected to be evident until the 4th, 5th and 6th grade levels.

Assessment of the degree and quality of implementation of the MAP-FT instructional model in the classroom is, of course, an ongoing process for both training and evaluation purposes. Assessments of the classroom learning environment (CLE) are derived from both the observation check list (used by a training specialist to help teachers implement the program more effectively) and a classroom observation instrument (designed by the Stanford Research Institute). Other specific concerns are reflected in special research projects conducted by MAP personnel for purposes of learning more about the basic processes of intellectual development in MAP classrooms as compared to more traditional programs.

The basic evaluation design may be summarized in outline form:

A. Overall project assessment

B. Descriptors

C. General Questions

   1. Program maturity effects

   2. Specific child factors and performance in MAP

   3. FT-NFT comparisons

   4. Post Follow Through Effects

D. Specific concerns

   1. Classroom learning environment and children's intellectual, social and emotional development

   2. Special research studies

Data and Instrumentation

The tasks used for overall assessment of project progress was (MAP Project Assessment Instrument, 1972) developed by MAP personnel. Seven rating categories are used in assessing a number of aspects of project development. MAP staff make the observations and record ratings on a Project Assessment Chart which is outlined below:

Part A. Program-Project Coordination

- Sec. I. Negotiation of Guidelines: Objectives and Priorities
- Sec. II. Negotiation of Guidelines: Resource Allocation
- Sec. III Negotiation of Guidelines: Project Organization
- Sec. IV Sponsor-Project Communication
- Sec. V Project Staff Training

Part B. Project Development

- Sec. I Communication System
- Sec. II Personnel Resources: Organization
- Sec. III Personnel Resources: Characteristics
- Sec. IV Quality Control System
- Sec. V Impact on Local Educational System
- Sec. VI Policy Advisory Committee

Part C. Program Implementation

- Sec. I Administration
- Sec. II Instruction Program
- Sec. III Noninstruction Program
- Sec. IV Evaluation and Monitoring

For a complete description of the instrument, including the rating categories, the reader is referred to: Mathemagenic Activities Program, Department of Psychology, University of Georgia, Athens, Georgia.

The descriptors of the children, teachers, schools, communities, and parents are obtained from various sources and recorded. Much of the information, of course, is obtained at the time a child is registered for school; teachers and/or parents are contacted for other particular data.

Standardized test data are utilized for evaluation of the four areas of major impact of the MAP Classroom Learning Environment on children and teacher. The Metropolitan Readiness Tests (MRTs) are administered early every fall to all entering children in the MAP-FT program. The purpose of these tests, as stated by the publishers (Harcourt, Brace, Jovanovich, Inc., New York) is to "measure the extent to which school beginners have developed in the several skills and abilities that contribute to readiness for first-grade instruction."

Standardized tests are also administered in the spring at the conclusion of each school year to all exiting 3rd grade children. Communities have the option of initial instrument selection. Currently, MAP local projects are using either the California Achievement Test (CAT) and/or the Stanford Achievement Test (SAT). As stated by the publishers (California Test Bureau/McGraw Hill, Monterey) the CAT is designed to "measure the skill with which the student performs in curricular tasks which are basic to learning progress." The SAT was developed (Harcourt, Brace, Jovanovich Inc.) to "measure the important knowledge, skills, and understandings commonly accepted as desirable outcomes of the major branches of the elementary curriculum."

The fall-spring testing is conducted for the purpose of assessing the children's entering ability, end-of-year performance, end of MAP experience and for training local educators in understanding the use of standardized tests and evaluation.

Observation data are also collected to satisfy one specific concern, *viz.*, that of the quality of the MAP-FT classroom learning environment. To provide such a structured description of the MAP-FT classrooms, the Stanford Research Institute (Stanford University) Classroom Observation Instrument (SRI-COI) is used. These observations help us assess the degree of implementation of the MAP-FT instructional program; i.e., the CLE is described in terms of interactions (or behaviors) of adults and children, the groupings of adult and children that occur within activities, and the materials used. In addition, information is obtained that permits a description of the relationship of specific aspects of the classroom process to changes in the child's academic, intellectual and social characterists.

A detailed discussion of the data collection design for various studies employing SRI-COI information can be obtained from the Mathemagenic Activities Program, Room 228 Psychology Building, University of Georgia, Athens, Georgia 30602.

Several projects are designed to investigate the effects of the MAP-FT instructional model on the social and intellectual competence of children. For example, one recently completed study involved the investigation of social competence as it is related to the development of particular perceptual and cognitive skills. Environmental status ratings (using a Sponsor-developed instrument) were related to the Peabody Picture Vocabulary Test (PPVT) (an auditory verbal test) and Piagetian tasks of intellectual development. Another study, in process, is concerned with the effect of MAP-FT on a child's ability to take another child's point of view; i.e., role taking skill. These and other ongoing studies, emphasize MAP commitment to determining multiple child outcomes (i.e., academic, social and intellectual) of the program. Complete information conerning these studies can be obtained from the Mathemagenic Activities Program.

Sponsor Evaluation and Other Evaluation Activities

The evaluation activities in the Sponsor program are designed to be as closely coordinated as possible to those of each local project. Sponsor staff members coordinate their efforts with project staff in developing data collection, recording, and reporting procedures that provide information needed locally, by the Sponsor, or for other appropriate agencies or individuals. Whenever "unplanned for" requests are made, the feasibility of using available information which approximates that requested is first explored. Should that not prove a possible alternative, special data collection activities are scheduled, if possible; i.e., if deadlines are flexible, resources are available, and there would be minimum interference of planned routines.

An open exchange of information between the Sponsor and each project is maintained to assist each other in providing information to meet outside requests. Records of such exchanges are kept so that both Sponsor and project can handle subsequent requests routinely as well as both remaining informed of reciprocal interests. Another useful line of exchange is among the various projects with the Sponsor many times serving as a "clearing house" function. For example, evaluation reports produced by local projects and disseminated by the Sponsor serve as examples of what the types of evaluation information communities need and provide others with more understanding of the MAP model as it operates in different settings.

The Sponsor recommends the administration of various data collection instruments to meet the needs of both Sponsor and the local projects. Generally, the testing of academic readiness and achievement is meant to fill gaps in the testing programs at the local and state levels and at the same time provide information about the impact of MAP. Such testing provides a base of information about the children in each project and allows an examination of patterns of academic development and status differences in different communities. The Sponsor and each project work together closely in the scheduling of data collection in order to reduce, as much as possible, time spent in the collection process. The responsibility for the collection of data achievement is usually with the local project; thus, the evaluation program becomes useful for the purpose of training local staff and teachers in various aspects including advantages and disadvantages of a particular method.

In addition to the local project and Sponsor evaluation efforts, agencies are commissioned by OE to conduct the nationwide FT evaluation. These three levels of data collection increase the possibility for duplication of efforts, but every attempt is made to avoid "over" testing children or others. Thus, inter-level support and coördination is necessary and the Sponsor staff assumes this responsibility as well as the sharing of data collected by the project, the sponsor and the National office.

Feedback and Dissemination

Feedback and dissemination are of concern to a variety of stakeholders in the Follow Through Office, as well as interested professionals.

The Sponsor advocates the development of within-project information exchange systems for the purposes of providing feedback information for, and enhancing communication among, the local "stakeholders." Local stakeholders are: (1) administrators, teachers, and other project staff members, (2) parents of project children, (3) non-project school teachers and administrators, and (4) other interested members of the local community. It is imperative that such stakeholders are kept informed of the activities of ongoing program and are provided with evaluative data on progress of the children. The evaluative data are helpful in making decisions regarding modification of instruction, future direction of efforts, etc. The responsibility of establishing and implementing an evaluation process lies with the local project. However, the information to be exchanged includes, of course, that obtained by the project evaluation process as well as that provided by the Sponsor in the form of periodic assessments, progress reports, annual reports, continuation proposals, special research-evaluation reports, and national FT reports of interest.

The initial feedback of information by Sponsor to the local projects is usually in the form of verbal reports and discussion. Reports of extensive analyses, pertaining to a particular queston or set of questions, are written for both professional audiences (viz., Research Reports) and for local audiences (viz., Research Bulletins). Also, Sponsor staff may be utilized (by special arrangement) to analyze data and provide reports on special questions of particular concern to a local project (eg., Project Reports and/or Reading Achievement).

Appendix A

FOLLOW THROUGH STAFF

1969 - 1975

Adeline Barber
Anita Bell
Mary Boroughs
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AMERICAN SOCIETY AND CHILDREN: 1850-1890

by

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Prepared for the

MATHEMAGENIC ACTIVITIES PROGRAM - FOLLOW THROUGH

of the

University of Georgia

Charles D. Smock, Director

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PREFACE

Only during the past few decades has the Federal government supplied a large amount of economic support for the education of American children. The establishment of our public school system was a historic landmark - the concern for children who were not provided equal educational opportunity was initially focused on children with special educational difficulty such as the very bright, the very dull, and/or the handicapped child. Only recently has the American public become aware that many other children are not provided equal educational opportunity for two basic reasons: 1) The nature of the home environment of economically deprived families are such that children from these homes cannot take advantage of the traditional American public school program; 2) The maldistribution of educational funds has been such as to favor "them that has" and to discriminate against those neighborhoods and children who are already economically deprived. Thus, one aspect of the poverty program has been to provide large amounts of support for so-called "compensatory" educational programs. These programs, such as Head Start and the Follow Through Program, reflect a growing commitment to providing truly equal opportunity for education for all of our children. The nature of educational programs, however, shows a historical development that is not unrelated to other aspects of our society. Of particular interest is the changing conception of childhood and the nature of the child. As our basic knowledge of human growth and development emerged during this century the educational programs, while lagging behind, have gradually begun to take more and more advantage of that knowledge. This fact is made quite clear as in this report as we look at the conception of "childhood" prior to 1900. The report should make us all more aware of our changing attitudes toward children as well as provide a good perspective on the rapidity of progress we can expect to make toward a better quality of life for all.

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May 1977

American Society and Children: 1850-1890

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The view of the child as an integral and important aspect of society has had a relatively short history. Although there is evidence to suggest that concern for children existed as long ago as Greek and Roman times, it has only been in the last century and a half that children have emerged as a topic of interest and concern as expressed in philosophies, theories, and debates developing at the time. In the prelude to the period between 1850 and 1890, harbingers of future events and attitudes regarding the child were appearing in several aspects of society - literature, territorial expansion, technological growth, and education.

The great public nurture debate began in America over a century ago when a call went out to citizens to save their children from the sins and errors undermining the republic. By 1830, a sizeable body of speculative literature about the problems of child care had slowly accumulated but thereafter, the older and isolated concerns about the proper raising of children merged into a flood of popular criticism. (Wishy, 1968, p.4) Writers of that era were not reluctant to confess, however, that their concern about American children was generally related to feelings of anxiety and "malaise" about the nation during the 1830's. (Wishy, 1968, p.4)

Influenced as many of these writers were by a simple, intense, Christian piety, their advice about the child tended to be abstract and hortatorical. Choices seemed simple: the child was God's or Satan's, a glory to the republic or its shame and corruption. (Wishy, 1968, p.5) Argument was predominantly apocalyptic and eschatological and even if occasionally it was more temperate, no sizeable body of facts about the physical and emotional development of children existed to help control any argument. (Wishy, 1968, p.5)

In debates about the child before the Civil War, Americans began to argue that harmony between child and society, success and godliness were possible without sacrificing either the child's individuality or the adult's fixed principles. (Wishy, 1968, p.6) This new attitude corresponded to the rapid, vast, and simultaneous changes happening in the country at this time. With the rapid extension of facilities for trade and transportation, development of factories, new inventions, and phenominal territorial expansion (Texas annexed 1845, Oregon acquired 1846, California obtained 1848) came a new cultural period. Mobility, expansion, zest for living, enthusiasm for adventure and novelty encouraged and necessitated more individual participation in public affairs, gradual removal cf restrictions of suffrage, and relative removal of artificial barriers of class and privilege. (Nakosteen, 1965, p.468) These changes required, in turn, an enlightened public.

The public was gradually becoming enlightened from a variety of influences including education, welfare, and religion which in turn altered or changed the family and society. One of the most dramatic changes in education was the development of a public education system. Among the important architects of this new education were educators and public-spirited leaders such as Horace Mann, Henry Barnard, Nathaniel Hawthorne, Henry David Thoreau, Pestalozzi, Herbart, and Froebel to name a few. (Nakosteen, 1965, p.468) However, it was largely due to the efforts of Horace Mann and his Seventh Annual Report (1844) that a new structure of elementary school was introduced in America: an academically graded elementary school adapted from the Prussians. (Nakosteen, 1965, p.472)

The first school opened in Boston in 1848 and was gradually adopted by the other states. The typical schools in the 1860's were usually crowded one-room schools in dilapidated buildings having poor lighting and ventilation and inadequate playgrounds. (Nakosteen, 1965, p.472) All the activities at school centered around courses. The child yielded to parental and tutorical demands for mastery of facts drilled into him by exacting instruction. (Nakosteen, 1965, p.472) For the grade school child, school was a robot parade-ground for the mind; virtually everything was drilled into young heads through interminable repetition. (Fabulous, 1971, p.144) One approved method for teaching arithmetic required that the pupils spend the entire first year working only on the numbers 1-10 (counting, adding, multiplying) before they were permitted to advance to 11-20. (Fabulous, 1971, p.144) Drill books for handwriting became a mechanistic nightmare instructing the pupil on the placement of his thumb, fingers, and even his feet before he was permitted to start. (Fabulous, 1971, p.144) Discipline was harsh. There were frequently forty or more categories of violations with a proportional number of lashes predetermined for each violation. (Nakosteen, 1965, p 472)

Strict discipline was also expressed in the literature and practiced at home as part of the pre-eminent concern that children learn clear moral lessons - on whatever psychological basis. (Wishy, 1968, p.54) Comparing literature for children and books about children at the time reveals a difference in tone. While parents were urged to become more realistic about the child's needs and to abandon preaching and over-didactic moral and religious instruction, the children were not themselves allowed to enjoy any significant freedom from moralism and homily in their books. (Wishy, 1968, p.55) Most books on conduct written for boys and girls at about 1850 had the same essential theme - the fulfillment of the individual by identifying with unquestioned truths of morality and religion. (Wishy, 1968, p.55)

This happy goal could be reached only if the child began by giving complete obedience and love to his parents in thought as well as in deed. (Wishy, 1968, p. 55)

However, for those pious parents who were troubled at reconciling the will with the Word in their offspring, they had an impressive, if diverse, array of "experts." The old-fashioned stress on "breaking the will" in more conservative and orthodox writers may have been an extreme position but there was universal belief that a disobedient child reflected in the worst possible way on his parents. A primary objective, whatever the method of nurture, was to assure an obedient child. (Wishy, 1968, p.43) Among the more conservative writers on the child was the President of Amherst College, Dr. Herman Humphrey. His book, Domestic Education (1840) was a catalog of errors for the day and a guide for perplexed mothers and fathers. (Wishy, 1968, p.20) Among other things he called for absolute rule by the father, advised that any child who remained at home after age 21 be treated as a minor, and urged fathers that they try to control the child diligently by the age of 4 months. (Wishy, 1968, p.20)

Therefore, the Father during this period emerged as authorative - at least in theory. For although his wife called him Mister and his children, once out of swaddling clothes, addressed him as Sir, (Fabulous, 1971, p.186) in America during this period most fathers were away during the long day and the mothers inevitably had great influence in inculcating the child's religious and moral ideas. (Wishy, 1968, p.26) While the father may undoubtably had formal and ultimate authority, how often could it have been used?

In city homes, for six days a week, fathers went to work early and returned late, so the child was closer to the mother or, in wealthier homes, to a domestic "nurse." (Wishy, 1968, p.24) In American farm families, there was a greater closeness of children and both parents than in city homes. With farmhouses being presumably cruder and simpler dwellings than city homes, the nearness to the mother, father, and older children increased the opportunity to observe and overhear adult behavior and conversations. (Wishy, 1968, p.24) Even on farms, however, the youngest children did not work too near the father and, like some urban children, they may have seen him only at meals. (Wishy, 1968, p.25) But he could easily be recalled from the fields or the child sent out to him for punishment. (Wishy, 1968, p.26) But whatever the ultimate or formal supremacy of father in most homes during the child's earliest years the mother was probably far more important than the father as an immediate source of ideals and as a disciplinarian. (Wishy, 1968, p.26)

Throughout this period of strict discipline and conservative writers, there was also a growing number of suggestions that whipping not be used as a means of punishment until all other gentler means of training had failed. T. S. Arthur advised parents, "Young children often do wrong merely from the immaturity of their reason or from a mistaken principle." (Wishy, 1968, p.43) Harriet Martineau called for "shouting hours" and George Ackerley argued against fears of noisy children at play. (Wishy, 1968, p.43) Opinions ranged from the view that harsh punishment would seldom, if ever, be needed if good examples were set for children by their peers, to the notion that the rod should be held in reserve and used only for extreme offenses. (Wishy, 1968, p.43) A notable phase of the debate about corporal punishment was started by Horace Mann's proposal that the use of the rod be severely limited in schools. (Wishy, 1968, p.43) In the South, Braxton Craven had announced his opposition to "punishments that mortify (dunce blocks, leather spectacles, etc.) and excessive use of the rod." (Wishy, 1968, p.43)

As the strict Calvinistic notion of infant depravity and the accompanying stress on conversion as the sole aim of religious education waned and the more liberal ideas gained impetus, Americans gradually created, within the context of respectable protestant traditions, a new status for the child. Popular Christian moralists steadily drifted toward a primary concern with the flexible character of the child. (Wishy, 1968, p.17) Parents began to be urged "not to press too closely upon children such non-essential points as form the distinguishing particularities of the various sects of Christians." (Wishy, 1968, p.17)

With the increased attention on the child and the family, criticism as well as advice was freely offered. Apparently society's new found enthusiasm for adventure and zest for life had "rubbed off" on the children. By the 1840's there were ceaseless complaints of both American and foreign observers about the spoiled, corrupted, and unruly children. The disorder of the American home was attacked by Fredrika Brenner who claimed that the American mother showed her love for her children "principally by spoiling them." (Wishy, 1968, p.13) One great enemy cited by critics was "Fashion", for it had spoiled the child and distorted his nature. Everywhere the proper republic simplicity and Christian order had been violated. (Wishy, 1968, p.14) The child was wrongly nursed, wretchedly fed, overdressed (remember little Lord Fauntleroy?), too closely supervised while playing, and overtaxed intellectually. (Wishy, 1968, p.14) Fashion had made the child into an artificial, spoiled, or excessively grave household pet or live doll. (Wishy, 1968, p.15) In the best homes, therefore, one found the very vices besetting the nation; a growing love of luxury, indulgence of the senses, affected manners, and unbecoming worldliness. (Wishy, 1968, p.15)

Although history has shown that young people have moved through several status phases - seesawing from low to high and back again, (Musgrove, 1965, p.58) once the stigma of researching, writing, and regaling children was broken, and a concomitant prestige was assigned to those who did, the status of children was never again to return to the lower echelons of society, but instead to occupy a favored place as the hope and future of that society.

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AMERICAN INDIAN EDUCATION

by

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MATHEMAGENIC ACTIVITIES PROGRAM - FOLLOW THROUGH
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Charles D. Smock, Director

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PREFACE

Follow Through is a federally funded research and development program designed to determine the effects of planned variation of educational experiences (different types of classroom "models") on the learning process in young children predominantly from economically deprived families. It is a comprehensive educational program concerned with all aspects of community and child development but special emphasis is placed on the school learning environment and parent involvement. The Follow Through Program emerged as a result of the experiences with the Head Start Program and its limited success in erasing the educational deficits of children from poor families. American education has given considerable attention over the past two or three decades to the exceptional child (i.e., the exceptionally bright or exceptionally dull, the handicapped, etc.). It was only during the sixties, however, that sufficient awareness developed to make it possible for the federal government to give special attention to those children at an educational disadvantage because of their home environment. While many such children are white, these "compensatory education programs" brought to light the severe educational disadvantages of a number of minority groups in our country. This is especially true with respect to our black, Indian, and Mexican-American families. This report examines the history of American education with respect to our Indian children. It is obvious that the educational deficits of these children derived from a long period of neglect, cultural shock, and application of extremely archaic educational principles. It is hoped that such programs as Follow Through will make a permanent change in providing for better educational opportunities for the families and for the children of these neglected segments of our society.

C. D. Smock
May 1977

AMERICAN INDIAN EDUCATION

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Concern for all minority groups has gained increased attention over the last couple of decades due, in a large part, to the impetus of the Civil Rights Movement. This increased awareness has uncovered what the American public has been sweeping under the rug of apathy for years: the poverty, unemployment, substandard housing and illiteracy that exist among the minority groups in this country. Amidst the affluency of American society today exists the deprivation of millions of Americans, and among these "left-out" millions are this country's first inhabitants - the Native Americans. Native Americans are by far among the worst-fed, worst-clad, and worst-housed group in the United States. These people, recipients of some of the poorest education and medical services in the country, are in a state of social and psychological maladjustment. (Steiner, 1964, p.626) Programs to aid the deprived educationally, economically, and environmentally have been created, but primarily with emphasis on the disadvantaged in large cities. Little has been done so far, in the area of rural-minority group aid.

The Native American has had a long history of second-class citizenship. This group may be technically "free", but social and economic oppression maintain a type of bondage. Native Americans are all too likely to become the victim of their own proud anger, their own frustration, and most humiliating of all, the victim of racial discrimination in their "own" land. (Steiner, 1964, p.626) Although schools, programs, and legislation concerned with the Americans date as early as the nineteenth century, they have generally met with little success. Educational policies, especially, have fostered much misunderstanding. Benjamin Franklin told of the response made by a Native American leader to an offer of education for their youth which helps illustrate the misconception

Whites had about the Native Americans:

> You who are wise must know that different nations have different conceptions of things and will therefore not take it amiss if our ideas of this kind of education happen not to be the same as yours. We have had some experience with it. Several of our young people were formerly brought up at the college of the northern provinces; but when they came back to us, they were bad runners, ignorant of every means of living in the woods...totally good for nothing. We are, however...obliged by your kind offer...and to show our grateful sense of it, if the gentlemen of Virginia will send up a dozen of their sons, we will take great care of their educations; instruct them in all we know and make men of them. (Fuchs, 1970, p.55)

This Native American who, so many years ago, made this statement could not have expressed the Indian-white relationship regarding education any better had he foreseen the frustration and humility his desendents would be subjected to in the ensuing years. For the progress of the contemporary Native American in education reads like the history of Indian-white relations: broken promises, depleted funds, white insensitivity, and Native American alienation. (Indian, 1967, p.520) Misguided philanthropy, misinformation, and misunderstanding have written a sad history of Indian-white relations which we are only now beginning to overcome.

The Federal government, at least since the Civilization Act of 1819, has maintained that education must play a significant role in helping Native Americans adjust to the society of the non-Indians in whose midst they live. (Officer, 1956, p.15) Formalized schooling for Native American children began in 1868 when the first government Indian school opened as a result of a treaty with the Navajos.

Altruistic as this may appear, the Federal government's notion of "helping Native Americans adjust", upon closer inspection, really meant obliteration of tribal institutions with concommitant conformity to the white norm. Ignoring the multitude of linguistic, cultural, and traditional differences among the tribes, the government entered the school business with vigor. (Fuchs, 1970, p.55) Boarding schools were established by the Bureau of Indian Affairs (BIA) primarily to supervise the children and to limit parental influence. (Officer, 1956, p.10) Children were removed, sometimes forceibly, from their families to attend the boarding schools. Once there, the use of any tribal language was forbidden and native religions were surpressed. This type of reservation educational policy persisted for decades in the belief that the most expedient means of assimilation was by removing children from the "harmful" environment of their homes and placing them in the "civilized" atmosphere of the schools.

The general pattern of intolerance for cultural differences that characterized American society in the 1920's and pervaded the Indian Service as well, finally led to a Senate investigation that produced the best critical survey of Federal Indian programs conducted to that date. The Meriam Report of 1928 in essence, called for a reversal of former policy. In order to strengthen the Native American family and social structure, rather than destroy it, the Report stated that government policies should immediately expand day schools, humanize the boarding schools, stimulate community participation, and relate curriculum more closely to the post-school needs of Native American youth. (Fuchs, 1970, p.57)

> Henceforth, the ensuing years ushered in a more humane and creative period in Indian affairs. It was the era of the New Deal and generally progressive legislation. John Collier, commissioner of Indian Affairs, was empathetic to Indian problems and a strong proponent of the value of cultural diversity and the rights of Indian peoples. The Indian Reorganization Act, passed in 1934, put a stop to land allotments. Tribal governments were formed, funds were pooled for the purchase of lost lands, and community schools were built. Although problems of poverty and economic development remained to be solved fully, it was a generally exciting and hopeful period. (Crow, 1965, p.22)

This "hopeful" period for the Native Americans came to an abrupt halt with World War II when federal spending was drastically reduced for many of the New Deal Indian programs. (Fuchs, 1970, p.57) And the end of the war did not renew the pledges of the Reorganization Act. Instead, a new policy was initiated by the Eisenhower Administration with a primary purpose of severing reservations from the services of the Bureau of Indian Affairs. (Fuchs, 1970, p.57) This new policy, known as "termination", although different in form and rhetoric, closely resembled the "allotment" era and other previous attempts by the government to force Native Americans into the general population. (Officer, 1956, p.35) However, after years of little success with boarding schools and other forms of attempts to control the Native Americans, the Federal government decided to transfer the responsibility of Native American education to the states and local school districts. This "new" policy was rationalized and based on three principal factors:

1. Native American's desire for non-segregated education.
2. The government's willingness to assist local districts in meeting the cost of educating Native American children.
3. Native American voluntary movement into areas of seasonal employment. (Officer, 1956, p.35)

Reluctantly, state and local governments accepted some of the responsibility for Native American education expenses, but controversy continued on the goals that education should include. Although forced assimilationist practices are largely a thing of the past, some educators still view the schools serving the function of teaching "Anglo" culture. Others would like to see schools emphasize traditional Native American lifestyles. However, a growing number of educators, and Native Americans as well, believe that a pluralistic curriculum, one that retains respect for the various Native American traditions and cultivates positive Native American identity as well as teaches skills for life in urban, industrial America would be the best, most realistic method. (Fuchs, 1970, p.58)

As recent as 1970, however, the situation in the schools had changed little. Aside from the TESL program, curriculum and methodology for Indian children are little different from those employed in schools throughout America. Minimum or no attention is given to the Indian heritage, or to contemporary issues in Indian life. On the whole, attention to the pedagogical complexities of cross-cultural education has been neglected by educators despite their clear relationship to school success or failure, and very few social scientists have concerned themselves with Indian children and the preparation of teachers to work especially in this setting. It is usual for the schools to ignore the cultural heritage of the children as if it didn't exist - or worse, as if it required eradication. (Fuchs, 1970, p.58)

But at least one school disagreed with this philosophy and has tried doing something about it. The program of the Demonstration in Navajo Education (DINE) established an experimental school at Rough Rock, Arizona in 1966. (Fuchs, 1967, p.82) Several of the most basic questions confronting American education are being enthusiastically explored:

1. Can a relatively uneducated, unsophisticated poverty group successfully assume control over the formal education of their children?
2. Can a truly pluralistic education that deliberately perserves identify of a minority people and instills pride in traditional culture heritage successfully prepare children for the demands of life in 20th century America? (McBroom, , p.13)

Dr. Robert A. Roessel, Director of the Rough Rock experiment, said "yes". Dr. Roessel applied a community control approach that could hold promise for poor, uneducated people everywhere.

The school itself was funded jointly through the Office of Education, (OEO), and the Bureau of Indian Affairs, (BIA). When the money was allocated to Rough Rock, the OEO-BIA officials in essence said, "This is your school. Make of it what you will. Develop a curriculum that will reflect what you think is important." (Conklin, 1967, p.4) And the program has done just that. The school offers 250 Navajo children from Head Start to grade 6 a dual education: A "normal" curriculum plus instruction in Native American history, language, and culture. (Fuchs, 1967, p.82) The program has adopted the philosophy that the choice for children should not be "either/or" but rather what Roessel calls a "both/and" philosophy. (Conklin, 1967, p.4) In education, as the Native American knows it on the reservation, one is either a Native American Indian or a white; and the way "we have traditionally weighted things, the good way is always the non-Native American Indian way and the bad way is always the Native American," (Conklin, 1967, p.4) says Dr. Roessel. He further states that "education can be a shattering experience when one is taught nothing but negative things about oneself for twelve years." (Pride, 1969, p.67) Therefore, the Rought Rock School has tried to incorporate the best of both worlds so that Native American child can be an American and an Indian.

Rought Rock is the first school to have the tools and resources to see whether this new approach can be effective. An assurance of success pervades the atmosphere of Rought Rock. Dr. Roessel is confident that, among other accomplishments, the school will provide training which will, in turn, create a labor force that will attract industry to the area, cut 70% of the unemployment rate, and will increase the $680 average yearly income of the reservation Navajo. (Fuchs, 1967, p.82) The demonstration school, created in a period of national concern for minority groups, at least seems to be on the right road to success. A change in policy and educational philosophy has certainly increased enrollment and the Navajo's interest in education. In 1900, most of the children in the United States had at least an elementary education, whereas only one in ten Navajo children were in school (and then only for one to two years). (Fuchs, 1967, p.82) However, with increased federal funds and antipoverty programs, the 1964 statistics showed 38,117 Navajo children in school, which is an increase of 23,000 from 1953. (Fuchs, 1967, p.82) With room for almost all Navajo children in school, attention has now turned from quantity to quality in education. (Conklin, 1967, p.6)

Quality is what the children at Rough Rock are experiencing. With a full-time staff of over 90 people (46 of whom are Native American and 35 of those from the Rough Rock community), including ten full-time classroom teachers, a remedial reading specialist, a speech therapist, an art teacher, a librarian, two TESL specialists, and fifteen VISTA members and an enriched curriculum including Navajo motifs, recordings of Navajo music and rituals, biographies of successful Navajos, and an arts and crafts program with a professional silversmith, moccasin maker, and potter, the demonstration school is providing an enriching curriculum for all its children and adults. (Fuchs, 1967, p.83) Beyond the curriculum itself, the school also tries to carry out an enriching program for all. Since the entire program is community rather than child-oriented, in part to help reduce the gulf between generations, parents and elders are encouraged to visit the classrooms and dorms at any time. (Fuchs, 1967, p.83) To overcome the alienation often felt by children sent away to school, the Board (composed of community members) at Rough Rock devised a plan whereby every five weeks a team of parents comes to work and live in a dorm. (Indian, 1969, p.19) Thus every child at school has a close relative in the dorm almost all year. Summarily then, the program at Rough Rock has tried to achieve a balance between two diverse cultures - the Navajo and the white. By allowing the Navajo child to "live" his/her culture rather than be alienated from it, he/she is able to develop pride and confidence in Navajo beliefs. From the resulting stability, the child is then able to handle the "foreign" norms and mores he/she encounters in white society.

From the little success of previous policies and the apparent success of the experimental school, it would seem advantageous to incorporate aspects of the Rough Rock program into other reservation schools and possibly to extend the policy to include all disadvantaged groups. If America's post Native American policy has shown anything, it has demonstrated that we cannot force people into the dominate culture simply by teaching them the dominant language. (Tell, 1969, p.55) When a cultural difference exists, teaching requires an understanding of cultural values and problems of the students. The lack of such empathy is not confined to BIA educational programs, and, in fact, is found throughout American educational practices. There prevails the discontinuity between teacher education institutions and the schools in which their graduates will be teaching; the inadequate number of minorities recruited into teaching; the lack of understanding and empathy for the culturally different and the poor; unsuitable instructional materials; inadequate professional leadership; and the lack of involvement of the community being served. (American, 1970, p.80)

However, part of the BIA's difficulty is agency-specific. While maintaining an educational system of its' own, it has been committed to the principle that Native American children should be placed in public schools. (American, 1970, p.80) This policy obviously maintains assimilationist goals and further expresses the general reluctance of the Federal government to run a school system, and further an unwillingness to allow parents (Native American or otherwise) to run their own schools. (Tell, 1969, p.55) This ambivalent position of presiding over a school system dedicated to its own demise is not conductive to adequate Congressional funding, support, or planning. Finally, a decision was made, albeit on an experimental basis, to allow more community involvement and decision-making concerning educational issues. Additionally, three major attempts heralded the new Federal philosophy:

1. The recent efforts of late Senator Robert F. Kennedy and his Task Force to shift emphasis to self-sufficiency, full participation in American life, and equal privileges and responsibilities of citizenship. (American Indian, 1969, p.242)
2. The new outlook from the BIA which is reflected in Commissioner Bennett's words, "The outlook for the future has never been brighter... I am confident of continued Indian progress. Leaders recognize and take advantage of opportunities on their own... Our programs are directed toward Indian self-involvement, self-help, self-development, and self determination.
3. The growth and development of the Branch of Education to the status of the Office of Education with five major divisions. (Cultural, 1969, p.438)

With the recognition and acceptance of divergent and minority cultures, formal schooling now has promise for producing citizens who will reflect the "best of both worlds". But it won't be easy. In a society such as ours, based on an economy that calls for highly competitive ability with the ultimate goal financial success and upward social mobility, it is necessary for the Native American to repudiate all the deeply ingrained values of his/her own culture in order to accept our culture. (Cultural, 1969, p.438) This is where the schools must help the Native American child adjust and to make a compromise if not a complete transition to the dominant society in which he/she lives and will be working. Adjustment can be made through education if changes are implemented on the basis of what the child believes. (Cultural, 1969, p.438) This must involve teacher training (or re-training) as well as curriculum revision. Teachers need to be aware of cultural differences in protocol (such as not asking personal questions), outlook (the concept of "here and now"), and basic beliefs (lack of competition and concomitant emphasis on sharing). (Steiner, 1964, p.628)

Since a child's early development takes place at home, that child absorbs his/her basic cultural values long before he/she enters the classroom. The task of the teacher then, is to not only be aware of the child's background, but to use the background as a foundation for further learning and growth. Another way of helping a minority child bridge the gap between the learned culture and what he/she will face in school, is to begin the school experience early. Head Start (and Follow Through) has been used to perpetuate this philosophy, and has been launched as a universal pre-school program. Begun early enough and continued gradually, the Native American introduction to a different culture can be a worthwhile learning experience rather than something which frightens and frustrates him/her throughout the schooling years.

It is too soon to judge the policies of the 1970's,* but certain aspects are clear. The myths of the vanishing and silent Indians have been shattered.

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* - See "Update" following this paper.

Active participation and organization by Native Americans themselves are growing, as evidenced by the National Congress of American Indian Tribes, meetings such as the National Indian Education Conference, and the proliferating groups of organized college students and "Red Power" advocates. (Fuchs, 1967, p.85)

The old chiefs are gone, the young adults are to be found in school rather than in the woods, but the lesson is clear. It is not just the Native American who has to learn from us, there is much Americans have to learn from the Native Americans, the values inherent in group identity, respect for nature, the right of people to participate in the institutions that affect their lives; and that no policy or program regardless of how well intended, will succeed without that group's approval. (Fuchs, 1967, p.85)

A moral obligation to the Native American is implicit in all these considerations. But leaving morality quite aside, there is the consideration of the astronomical cost to the nation incurred by our failure to lift the bondage of perpetual poverty from these proud, intensely patriotic, and undefeatable people. (Steiner, 1964, p.630)

26 Conklin, American Education, p.6

27 Fuchs, Saturday Review, p.83

28 ibid

29 ibid

30 "Indian Schools," New Republic, CLX (February 15, 1969), p.19

31 ibid

32 ibid

33 ibid

34 "Tell It Like It Is ... Only How Is It?" Todays Education, LVIII (November, 1969), p.55

35 "The American Indian - a stifled minority," Journal of Negro Education, XXXVIII (Summer, 1969), p. 242

36 "Cultural Dilemma," Social Education, XXXIII (April, 1969), p.438

37 ibid

38 ibid

39 Steiner, Nation, p. 628

40 Fuchs, Saturday Review, p. 85

41 ibid

42 Steiner, Nation, p. 630

Endnotes

1 Stan Steiner, "The American Indian - Ghettos in the Desert," Nation, CXVIII (June 22, 1964), 626

2 Ibid

3 Estell Fuchs, "Time to Redeem an Old Promise," Saturday Review, LIII (January 24, 1970), 55

4 "Indian Education," Science News, XCI (June 3, 1967), 520

5 James E. Officer, Indians in Schools (University of Arizona Press, 1956), p.15

6 Fuchs, Saturday Review, p.55

7 ibid

8 ibid

9 Crow, American Education, p.22

10 ibid

11 ibid

12 Officer, Indians in School, p.35

13 ibid

14 ibid

15 ibid

16 Estelle Fuchs, "Innovation at Rough Rock," Saturday Review, L (September 16, 1967), p.8

17 McBroom, Science News, p.13

18 Paul Conklin, "Good Day at Rough Rock," American Education, III (February, 1967)

19 Fuchs, Saturday Review, p. 82

20 Conklin, American Education, p.4

21 ibid

22 "Pride of the Reservation" Time, XCIII (April 11, 1969), p.67

23 Fuchs, Saturday Review, p.82

24 ibid

25 ibid

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